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The Oil Man's Calendar

SEPT.	
8–12	American Chemical Society, Atlantic City.
17–19	National Petroleum Association, Atlantic City.
OCT.	
2– 3	West Virginia Oil & Natural Gas Association, Clarksburg.
6– 9	National Safety Congress, Chicago.
9–11	Texas Mid-Continent Oil & Gas Association, Beaumont.
16–17	American Association of Petroleum Geologists, Pacific Section, Los Angeles.
16–18	American Institute of Mining & Metallurgical Engineers, Petroleum Division, Dallas.
20–22	Independent Petroleum Association of America, Tulsa.
30–31	American Institute of Mining & Metallurgical Engineers, Petroleum Division, Los Angeles.
31	California Natural Gasoline Association, Los Angeles.
NOV.	
2– 7	American Petroleum Institute, Annual Meeting, San Francisco.
DEC.	
3	New Mexico Oil & Gas Association, Artesia.
5	Oklahoma Stripper Well Association, Tulsa.

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The Changing Panorama

Ickes' Committees

Politics should have no place in selection of regional groups

Appointment of regional committees composed of oil men to assist the petroleum coordinator is a sensible and a practical step. No one knows better than the oil industry itself the necessity of a close contact on the part of executives with actual operations.

Coordinator Ickes at the Washington meeting June 19 expressly requested that not only major companies but independents make their nominations for these regional committees. Certainly the committees should include both major company representatives and independents as well. If an oil company fails to make a nomination it cannot well complain on any choice which might be made. It goes without saying that if the oil companies have nominated their best men, the personnel of the committees should be representative of the best brains and experience of the industry.

Many Errors Can Be Avoided

If the coordinator and the deputy coordinator show the proper disposition to act on the information and advice from well chosen regional committees, many errors will be avoided.

Operating at such a long range from the field of action itself, Washington could easily make the mistake of assuming that proper direction of the oil industry can emanate from the brains of official Washington. Already we suspect official Washington is beginning to revise some of its ideas of the oil industry and realize that there is more to successful oil operation than fiat decisions from the executive offices in the East.

Naturally, the selection of the men on the regional committees will determine to a great extent the value of the information and advice going to Washington from those regional committees. Just as the successful operation of an oil company with headquarters in new York depends on the wise selection of lieutenants out in the field and in the refineries, just so will the operation of the oil industry under the coordinator depend upon the proper selection of men.

Any oil company which selects its employes for political reasons is an oil company headed for the junk pile. We sincerely hope that political considerations will have no part in the selection of the committeemen from the various areas. If the question of whether or not the proposed committeeman is a New Dealer arises, then this very consideration will automatically result in inferior committees because most oil men are not dyed-in-the-wool New Dealers.

When the committees are selected we shall see more clearly whether or not patriotic or political motives are involved in this experiment in coordination.

Shorter Tanker Routes . . .

Contrary to opinions expressed by a number of parties, the distance between the northern shores of South America and Halifax, Canada, is shorter than between the Gulf Coast of the United States and Halifax. Comparison of normal shipping routes between these points, shows sea lanes from the Gulf Coast require 12 hours more time to reach Halifax than do those from South American oil ports supplying the bulk of current oil traffic for Britain.

Lubricate to Save . . .

Out of the need to conserve alloys can come, if the oil industry wills it, improved operating practice and greatly prolonged equipment life. For instance, in the past, checks of drilling chain performance have shown hole footage of as little as 50,000 before replacement, when life from 200 to 400 times that amount is possible through proper lubrication.

Expenditure of a few dollars to enclose a chain drive permits installation of a lubrication system that will greatly prolong the life of the chain and coupled with more careful supervision greatly reduces replacements.

Early study of lubrication facilities, as one suggestion, and prompt improvement will prolong the life of many items of oil-field equipment and will not only pay immediate dividends but will assist in avoiding the drastic results of a shortage in these products.

Trade Associations In Defense

Washington shouldn't overlook service to be had from organized groups

Observers in Washington tell us that under the present emergency set-up, the days of trade associations may be numbered. Such a thing would be most unfortunate.

If we would attempt to assume dictatorial powers in any country or any industry, the first thing that we would do would be to render voiceless that industry or country over which dictatorship was aspired.

Without the trade associations the voice of industry would be largely stifled. With trade associations the conservative voice of industry can be raised to such an extent as few private individuals would assume to raise their own voices.

Certainly the oil industry has demonstrated a desire to cooperate which makes unnecessary the fear that the program of the government will be sabotaged simply because it is the program of the government and because it may not meet the full approval of the industry.

In an editorial written on May 31, the day that the President wrote his now famous letter to Secretary Ickes, appointing him petroleum coordinator, THE OIL WEEKLY said that the oil industry will do its very best in cooperating with the government. There has never been at any time any attitude or desire on the part of the oil industry to fail to participate fully in this matter of national defense. This attitude, as expressed by people within the industry during the past three weeks, has unquestionably impressed Secretary Ickes. We hope that he will recognize in

petroleum trade associations an opportunity to develop greater service from the industry and that he will recognize that trade associations, representative as they are of a democratic system, have their full place in the present picture.

Expansion Financing

Industry expected to provide most of money needed for defense building

Oil companies probably will face the necessity soon of choosing methods by which to raise additional capital for building refining and transportation facilities in connection with national defense. Whether they will raise the funds by bond or stock issues, sold to the public, or by bank borrowings remains to be seen; although in recent years they have found it desirable in many instances to obtain funds from the banks. The oil companies have repeatedly refinanced indebtedness, in recent years, and in numerous cases have gone to the banks rather than to the public for needed funds in that connection. Consequently, much of the borrowed money is being used at low interest.

Some Government Money

It is to be expected that some government money will be sought, as was done in the case of some of the toluol and synthetic rubber plants, for building facilities needed primarily because of the war. The government is building some of these plants and will own them but will have the oil companies to supervise their construction and to operate them.

Shortage of ships and the uncertainties of the Far East have accentuated the need for synthetic rubber plants, and oil companies, as well as the chemical and rubber companies, likely will be called upon to provide much new capacity for making rubber from petroleum.

Although synthetic rubber is being produced commercially only on a limited scale, it holds possibilities of being economically practicable if output should be expanded to a mass production basis. Consequently, it is possible that the oil companies may be willing to go into this line of business on an important scale with their own money, particularly if the government will adopt a tax policy that will encourage them to make the necessary investments.

Plants for the production of toluol, basic ingredient of TNT, however, do not have attractive possibilities for the oil companies as business ventures and it is to be expected that the companies will prefer to have the government raise the funds for their construction; although the plants ultimately may be put to peace-time use to some extent.

Industry to Finance Lines

Capital that will be needed for expanding oil transportation facilities apparently will be raised in substantial proportion by the industry, without government help; particularly in so far as the projects involved will be of normal economic soundness. The industry doubtless will be willing, accordingly, to make large investments in new tankers, in some barges and railroad tank cars, and in pipe lines of reasonably assured practicability for peace-time use.

If the industry should be called upon for the financing of extensive pipe lines which normally would be competitive with coastwise tankers, it quite justifiably might be expected to ask for government funds instead of attempting to provide the lines itself.

Furthermore, as in the case of some of the extensive and costly pipe lines now in use, under construction, or proposed, it is to be expected that some of the future large projects will virtually necessitate a pooling of the financial resources of groups of companies rather than the undertaking of construction by individual concerns.

Floods and Price . . .

Flood operations in oil production are developed on a narrow margin of profit. Recoveries are known within fixed limits, as are also development, operating, and treating costs. Therefore, even a very slight fluctuation in the price of crude oil bears directly upon the anticipated returns from such secondary practices. It has been estimated that in the Nowata-Rogers area of Oklahoma, scene of many flood projects, that each 5-cent increase in the value of crude means that an additional 2000 acres can be added to floodable acreage. Thus, recent crude prices have stimulated flood operations and have added considerable potential acreage to that available for this method of production. Any downward revision in price would immediately reverse the situation.

Price Fixing Is a Two-Way Problem

Complex elements of oil industry must be served as well as public

Because the petroleum industry is far-flung, complex, and operated by many companies and individuals, its affairs henceforth are to be coordinated by the government, in furtherance of the national defense. But because the industry is large and composed of numerous diversified and dissimilar units, the governmental job of coordination entails the responsibility of dealing out fairness and justice among those units as well as the responsibility of making the units function together efficiently. Consequently, the less the government finds it necessary to assert authority over the intricate workings of the industry, the less likely is it to create problems that would weigh unequally on the different companies and individuals that man the industry. Conversely, the closer the government sticks to a policy of merely guiding the industry along a distinctly outlined course toward necessary objectives, without too much concern over details, the more likely is it to avoid working difficulties upon individuals and upon individual companies or groups of companies.

If the government should seek to extend its authority over oil prices, for example, as there have been indications it might, then it would undertake the responsibility of assuring fairness not only to the public but also to all the elements within the industry, some of which sell to the public and some of which buy from or sell to each other. Prices at the well, at the refinery, to the dealer, and at the service station heretofore have been determined through complex workings of many economic forces, and these forces can be depended upon to do a generally fairer and more satisfactory job of price determining than any arbitrary regulating agency could hope to accomplish.

Washington Round Up

Coordinator's advisory committee to be named . . . Ickes urges more tank car movement to East . . . Railways and labor protest pipe lines . . . Oil to get voice in commodity control . . . Price-fixing looms

By B. F. LINZ, Washington Correspondent

THE actual setup of the defense control for the oil industry is expected to take shape immediately, as personnel for the advisory committees and key positions in the coordinator's office are expected to be selected during the week.

Stiff competition for places on the committees which will act in an advisory capacity to the petroleum coordinator's organization was evidenced as nominations arrived in accordance with the invitation extended at the industry meeting June 19 by Coordinator Harold L. Ickes.

It also is expected that the coordinator will name key members to his staff during the week, and he may possibly select locations of regional offices to be established.

Unable to get his teeth into his problems until his organization has been perfected, Ickes last week took time to urge East Coast companies to avail themselves of all possible rail facilities to move oil into the area, and scolded tanker operators for failing to attain his ideal of efficiency in reducing the turn-around time of vessels.

Ickes repeated assertions that the supply deficiency along the Atlantic Coast may call for "drastic" steps brought forth a challenge of his facts from the Independent Petroleum Association, with figures to support its contention that stocks in the area are being built up rapidly.

An all day conference, at which various proposals for construction of pipe lines to the East were studied, failed to come to any agreement, and it was expected Ickes would make specific recommendations to the oil industry in the near future. This meeting did result in a definite decision to go ahead with additional tanker construction.

Meanwhile, strong opposition to government construction or support of new pipe lines developed from southeastern railroad operators and railway labor groups.

Side issues of the week included:

Reorganization of the Office of Production Management under which oil and other industries will be given advisory representation through committees to assist commodity sections which are to be established;

Threats of formal price control, raised by the confessed inability of Leon Henderson's OPACS to keep up with the rapidly growing number of industries responding to inflationary influences.

Advisory Committees

Nominations for the 20 regional industry committees which are to cooperate in the defense coordination of oil are coming in to the coordinator's office in considerable numbers. Practically every phase of the business from wildcatter to consumer appeared anxious to have representation on the groups which it is proposed to set up. The coordinator hopes to make his selection before July 4, and it was rumored that his advisors already have picked a number of men whom they desire to have on various committees because of their acquaintance with the problems with which their groups will deal.

As disclosed by Coordinator Ickes at his industry meeting June 19, it is proposed to divide the country into five regions, in each of which a regional director will be established who will work with four industry committees representing, respectively, production, refining, transportation and marketing. Each committee is to consist of not more than 12 members, and the chairmen of the several committees in each region will, upon call, serve as a general coordinating committee for the area.

Subject to any changes which later may be found desirable, the five regions have been set up as follows:

EASTERN: Maine, New Hampshire, Vermont, Massachusetts, Rhole Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida.

MIDDLEWEST: Ohio, Kentucky, Tennessee, Indiana, Michigan, Illinois, Wisconsin, Minnesota, Iowa, Missouri, Oklahoma, Kansas, Nebraska, South Dakota, North Dakota.

GULF: Alabama, Mississippi, Louisiana, Arkansas, Texas, New Mexico.

NORTHWEST: Montana, Wyoming, Colorado, Utah, Idaho.

PACIFIC: Arizona, California, Nevada, Oregon, Washington.

So great is the pressure for position on the regional committees that suggestions have been made for the creation of subcommittees in each state, which are being resisted in Washington because of fears that there would be built up a complex and unwieldly organization, as was the case under the code when committees were set up even on a county basis.

The industry committees will function purely in an advisory capacity and will not be permitted to initiate group action in any matter which might involve a possible violation of the anti-trust laws.

As a whole, however, Coordinator Ickes forsees situations in which the industry, generally, will be asked to do things which under normal conditions might bring down upon it the wrath of the Department of Justice, and to protect against such an eventuality the Attorney General will be asked to give his approval to any such action, as was disclosed by Solicitor General Biddle at the industry meeting.

Instances where the industry may be asked to do things which might be construed as violation of the anti-trust laws are seen by Ickes in the fields of cost reduction, conservation, and utilization of the

facilities of the four separate branches in such ways as to provide maximum efficiency.

These situations, however, are to be met by putting all recommendations or directions of the coordinator in writing, publishing them in the "Federal Register" and filing copies with the Department of Justice.

Washington Staff

With Ickes also expected to name key members to his headquarters staff during the week, there was considerable speculation over the men who will comprise the backbone of the coordination organization at Washington. Indications pointed to R. E. Allen, California oil consultant who was prominent in NRA, as assistant to Deputy Coordinator Ralph K. Davies and in charge of production. The position of acting general counsel it said to lie between Alvin J. Wirtz, former under-secretary of the Deparment of Interior and oil company attorney from Texas, and J. Howard Marshall, another Californian and lawyer who has served Standard Oil Company of California.

There is some question whether both Allen and Marshall will secure positions, however, at it would put Californians in three of the most important spots in the set-up, two of them with Standard Oil Company connections; since Deputy Davies formerly was with the Standard Oil Company of California.

Pipe Lines Studied

Further details of projected pipe line service to the East Coast were ironed out June 26 at a conference between Davies and representatives of 35 oil companies.

The meeting, which also discussed construction of new tankers, went over the various proposals for pipe lines, but it was indicated that a difference of opinion exists with respect to many of the questions considered, which included possible routes, length of time required for construction, type and size of lines, construction costs, engineering problems, sources of supply and operating locations.

Throughout the negotiations it was made clear that the lines were to be built by the industry itself for operation as common carriers, rather than facilities to be built by or with financial aid from the government.

The whole question will be reviewed by Davies, who will submit recommendations to Ickes who, because of the inability of the conferences to come to an agreement, is expected to outline specific suggestions on the size, type and route of the line or lines he feels may be necessary. His decision is expected to be announced within a few days.

The one definite development of the meeting was a decision that additional tanker construction should be undertaken simultaneously with the building of pipe lines and regardless whether such lines are laid.

Shortage Aids

Coordinator Ickes during the week made his third move to prevent a shortage of oil on the East Coast. This consisted of telegrams to various companies operating there, urging them to make full use of railroad tank car capacity even though that movement "will in many ways be more expensive than movement by other means."

Ickes' first action of this kind was securing an agreement between Sun Oil Company and Standard Oil Company of California for transfer of three vessels from the Pacific-Atlantic route to the Gulf-Atlantic service, and the second his discussions with company executives regarding construction of a pipe line from the Gulf fields to the Atlantic Coast. He also has given approval to the Cole pipeline bill and legislation to permit coastwise tankers to carry more oil by relaxation of the load-line limitations.

"Increased efficiency in delivery of petroleum products by all agencies will result in bettering the East Coast situation," he said, "However, the problem is far from solution and more drastic steps may become necessary."

Ickes telegram asked each company to give "immediate attention to possibilities of this greater use of tank cars and proceed as rapidly as possible with such as you are able to develop," and requested that he be informed within the week specifically what each concern considered possible to accomplish along this line.

Playing no favorites, the coordinator followed up his message on rail transportation with one to the tanker operators, exhorting them to give "maximum performance such as only an emergency develops," and chiding them for failing to reach that efficiency by their own acts.

"In view of pressing need for transportation facilities, particularly tank ships, it becomes imperative that every possible effort be made to increase productivity of each and every tank ship available," he telegraphed the operating heads of the various tanker fleets. "Present conditions demand a maximum performance such as only an emergency develops. From such review as so far made it is apparent that the utilization of these facilities falls short of emergency maximum.

"I therefore draw your attention to this possibility and recommend you immediately have thorough and searching examination of the daily performance of each of your tank ships as revealed by the vessel's log with a view to discovering wherein in each case some improvement can be made. Resourceful minds concentrated upon this problem will produce results of real importance.

"I suggest special attention be given to possibilities of better planning and coordination of transportation requirements, adjusting schedules to minimize delays, provision of improved port facilities, improved loading and unloading operations and to the various operations in port. I would appreciate a report as to the degree of success attending your efforts that we may better gauge the tanker situation and pass on to others ideas of value."

Deputy Davies June 25 wired 21 large companies urging them to make no changes in their relations with customers until after a conference which will be called in the near future. This message, it was explained, was designed to prevent instances, which he said already have occurred, where supply companies faced with an impending shortage might decline to fill the needs of some of their customers.

"As the proration of petroleum products by supply companies to commercial consumers, distributors and retailers may inadvertently cause maladjustments of wide variety and in some cases result in serious losses by those who can least afford them, it is recommended that all supplying companies in the Atlantic Coast area refrain from establishing policies that change existing supply relationships until a comprehensive plan can be worked out between them and this office," Davies said in his telegram. "In pursuance of this recommendation, you are requested to supply such data on existing supply and account relationship as you

consider necessary for a forthcoming conference on this subject."

Shortage Disputed

Challenging Ickes' assertions that rationing of gasoline might be necessary to meet the supply deficiency along the Atlantic Coast, the Independent Petroleum Association June 26 declared that stocks of gasoline and distillate fuel oil in the affected area were being increased at a rate greater than the normal average, and that fuel oil demands probably could be taken care of in proper time by adjustment of shipments.

"There is no apparent danger of immediate shortage," Russell B. Brown, general counsel for the association, asserted in presenting figures showing that gasoline stocks are being increased to meet the immediate heavy consumption. Gasoline stocks on the East Coast, which usually decline at the rate of 13,000 barrels daily during this season, were being added to at the rate of 42,000 barrels per day and distillate fuel stocks, which normally increase 40,000 barrels daily, were being increased 41,000 barrels.

The association's figures showed that crude stocks, which over the past five years increased an average of 20,000 barrels per day during May and June, were reduced 27,000 barrels per day in those months this year, and that there was no change in residual fuel stocks, which in the past have been added to at the rate of 23,000 barrels daily.

Consequently, stocks of principal products in the East Coast are increasing at the rate of 56,000 barrels per day after meeting a very great increase in consumption in contrast with a five-year average during May and June of 70,000 barrels. Brown felt that this should create no cause for alarm, as shipments have been adjusted to provide additional gasoline to meet consumer demand and can be readjusted latter to take care of fuel consumption increases during winter months.

Railroads vs. Cole Bill

Railroad operators and labor "ganged up" on the Cole bill before a Senate Interstate Commerce subcommittee June 23, declaring proposed southeastern pipe lines had no national defense significance, would lead to an over-supply of transportation facilities at termination of present emergency and thereby throw railroad labor out of work, and also charged enactment of the measure would place the seal of Congressional approval on oil-company ownership of pipe lines which had been condemned by President Roosevelt and was the subject of divorce legislation by Senator Guy M. Gillette of Iowa. Attention also was called to the fact that companies involved are charged with monopoly in the pending anti-trust suit. Most of the testimony was directed toward possible injury to railroad operations.

After a second hearing June 27 and a discussion of the situation with Edward B. Swanson, associate director of the petroleum conservation division on June 28, the subcommittee took the measure under consideration and planned to report it to the full committee June 30.

The decision to take quick action resulted from a plea by Coordinator Ickes that delay might result in serious consequences, and an assertion by Swanson that full effects of the diversion of tankers will be felt in the East in the next two or three weeks.

At the June 27 hearing, representatives of the coal industry protested against a proposal made by Senator Tom Stewart (Dem., Tenn.) to provide for construction of natural gas pipe lines also. They asserted there was no need on the part of the public or defense situation for natural gas lines, and would give government aid to a competitor of coal.

As a result of the opposition to his proposed amendment to the Cole bill, Senator Stewart said he would not ask for inclusion.

During the hearings it was disclosed by Swanson that the oil coordinator would meet with oil company officials next week to discuss a pipe line to run from Texas to St. Louis thence east to the Atlantic seaboard.

Appearing on behalf of Class 1 southeastern railroads, W. L. Stanley, Seaboard Railroad vice president, asserted all the oil from Gulf ports to Atlantic ports as far north as Norfolk could be handled with half of the tank cars now idle on southeastern tracks, releasing 12 tankers for use to North Atlantic ports. He admitted, however, he knew little about conditions on the northern part of the East Coast belt, which will be most severely affected by the shortage.

Stanley revealed that the Navy plans to supply its Norfolk base requirements for fuel oil by barge from New Jersey through intercoastal waterways.

Declaring that "there is absolutely no necessity, as we see it, for any pipe lines in the southeastern territory," he warned the committee that the termination of the present emergency will be followed by the most severe depression the nation has even known and urged nothing be done to make it worse. If the bill is adopted, Stanley asserted, the need for any proposed pipe line should be definitely determined before it is authorized, lines should be constructed only by the government and their operation should cease upon termination of the emergency.

As an alternative, he said the bill should be amended to prohibit operation of lines by oil companies after the emergency. Under oil company operation, he charged, the public will get no benefit from pipe lines through lower prices because, regardless of the method of transportation used, the companies base their prices on the cost of transportation by rail.

Explaining that railway labor alway has opposed government subsidies for competing methods of transportation, John T. Corbett, legislative respresentative of the Brotherhood of Locomotive Engineers, who termed the measure "another long list of questionable actions" by the oil industry, expressed doubt that 50 tankers had been transferred to British "shuttle" service. He suggested the bill be held up until outcome of the German-Russian conflict to determine if that situation might result in the return to the United States of vessels now engaged in Japanese trade.

Export Control

Moving to accommodate its operations to the controls imposed on oil exports by President Roosevelt June 20, the State Department last week announced it will permit shipment of products which had not previously been subject to restriction, from Atlantic ports to Western Hemisphere points under general license until July 31.

Such products also will be permitted to be shipped under general license to any foreign destination from United States ports other than those on the Atlantic Coast until July 31.

Under the order of June 20, exports of all oil products from the United States were made subject to control and shipments of any product were barred from the Atlantic Coast ports to any destinations except the British Empire, Egypt and the Western Hemisphere.

At the time it was said that no embargoes were contemplated on oil from Gulf or Pacific ports to any destination, but the limitation of such shipments under general license to July 31 will afford an opportunity for review of the situation and a determination of any

steps which should be taken to restrict exports from the West Coast in view of the possible new conditions developed by the Nazi attack on Russia, which may involve Japan as a member of the Axis.

OPM Reorganization

A stronger voice for the oil industry in the administration of the defense program by OPM was indicated last week in plans for reorganization announced by Director General William S. Knudsen and Associate Director General Sidney Hillman.

Appointment of an industry committee representing all branches of the industry and establishment of a special commodity section in the OPM to deal with problems of oil procurement were forecast as likely of announcement in the near future.

Apparently finally stirred by criticism of the cumbersome organization, under which industries with a problem on their hands have had to go from production division to purchasing division to priorities division, and perhaps back again to production, OPM leaders announced a plan for the establishment of industry committees and the setting up of commodity sections in which all questions can be dealt with, whether they apply to production, purchasing or priorities.

The industry committees will act in an advisory capacity, and their operations will be coordinated through a special office to be set up as a clearing house. All defense agencies, as well as the commodity sections, will be enabled to make use of the committees to obtain information and advice bearing upon their respective problems and may have representatives at the meetings between commodity section officials and their advisory committees.

Under this set-up, if an oil committee is appointed and an oil section created, all questions involving oil, whether on priority, production or purchasing problems, would be considered and handled in the oil section, and the chief of that section would forward his recommendations to the appropriate division—purchasing, priorities or production—for action.

So far as oil is concerned, it is probable that many problems presented will be referred to Coordinator Ickes, but it is expected that OPM will continue to keep purchasing and priorities under its control, because of the need for centralized administration of those matters.

The new organization will be patterned along the lines of the War Industries Board of 1918, but efforts will be made to keep it from becoming as complex as did that agency, which had 57 separate commodity sections when it finally folded up.

Industry Drafting

Legislation which originally would have permitted the President to take over any plant or property in the country when he deemed such action essential to the defense program will be modified materially by recommendations of the War Department which have been laid before the Senate Military Affairs Committee.

Under the original measure, which evoked a storm of opposition in Congress, the President would have been authorized to take over any property from a private home to the largest industrial plant. Designed to coerce reluctant industrialists into taking defense contracts which they may not wish to accept at a time when their civilian market is booming, the legislation was asked by the War Department, whose officials now admit it went further than was necessary or even intended.

The new bill, which is seen as receiving Congressional approval, limits the President's authority to the commandeering of military materials, machinery and tools required to produce them, and materials and patents or designs which go into their manufacture.

One of a number of industries which are cooperating wholeheartedly in the defense program, the oil industry is not seen as immediately affected by such legislation. The seizure power might be applied, however, in the event United States participation in war might create a situation where it became necessary to devote entire plants to the production of some particular military need, when official orders might serve to settle difficulties created by patent ownerships or interests.

Under the revised measure, outlined before the committee June 23 by Undersecretary of War Robert P. Patterson, the President, during the national emergency, when he deemed it essential to national defense or to overcome shortages, would be empowered to:

Requisition and take over for the use of the United States or in its interest any military or naval equipment or munitions or component parts thereof, or machinery, tools or materials necessary for manufacturing of such equipment or munitions, or any patents, plans, designs or rights controlling the production of such materials or supplies;

Use such articles on such terms as he shall deem satisfactory, or to sell or otherwise dispose of any materials so requisitioned or taken over, or any right or interest therein.

No changes are made in the provisions for reimbursing owners whose properties are taken over, under which the President would determine the fair price and the owner, if not satisfied, would be paid 75 percent of that price and could ask the courts to determine how much more he should get.

Price Fixing

Jumping frantically from commodity to commodity in an effort to suppress an apparently expanding inflationary trend, Leon Henderson, chief of OPACS warned carbon black producers June 25 against further price increases in that commodity.

In a letter to producers, Henderson invited them to come to Washington to talk the situation over and called attention to the position of his office that no price increases should be made unless the industry is unable to maintain reasonably satisfactory operations at existing prices.

The warning to make no price changes without government approval was actuated by the announcement of a distributor for one of the large carbon black producers of a 12½ percent markup to go into effect July 1.

OPACS officials said that this was the third price increase announced so far this year, as a result of which prices would be almost double those of 1940.

Current stocks of carbon black, it was said, are estimated to be equal to about three months' supplies. Demand in the domestic market has been running well ahead of a year ago, although exports have been affected adversely by the war.

As the OPACS attempted to deal with threats of price increases in a number of unrelated lines, there were indications that President Roosevelt soon would ask Congress for legislation giving the government authority to impose a mandatory price control.

Appearing before the House Appropriations Committee at hearings on the bill carrying funds for his agency, Henderson admitted that the situation may soon get out of hand, as the pressure of deficiencies in shipping facilities, scarcities in imported commodities and demands of labor for wage increases spread throughout industry.

It was made plain that the Administration does not want to get into the price-fixing field until it has to, but it was not denied that the inflationary trend is spreading rapidly.

Additions to the staff of Quinn Shaughnessy, chief of the fuel section of the OPACS, are in the making. Several technical men are to be employed including, it is reported, J. Elmer Thomas, oil geologist.

Postwar Recovery

With the threat of war creeping steadily closer to United States shores, Congress last week turned its attention to the problem of post-war recovery, spurred by warnings that if plans are not made now to cushion the shock of peace our traditional economic system may fall before "something more violent, more restrictive, more suppressive than any of us would like to see."

The warning was voiced by W. L. Batt, deputy director of production of OPM, testifying before the House Labor Committee on a resolution setting up a committee to study probable post-war conditions and work out a long-range program designed to assure continuous full operation of industry.

Batt pointed out that because of import stoppages, new industries are being created in this country, while the reservation of important materials for defense is spurring the development of substitutes; after the war, he said, these new industries will have to compete with foreign plants and the substitutes will have to compete with the materials they are now replacing, a new basis may have to be worked out for international trade between impoverished countries, and jobs will have to be found for millions of persons who will be thrown out of work by the closing down of military production.

Accordingly, he said, there are a vast number of problems which should be studied now with a view to finding their solutions before the impact of peace leaves no time to deal with them in the face of a suddenly loosed depression.

Among the major questions which he suggested should receive consideration now are what to do with the new industries which are being created; what to do with the increased manufacturing capacity now building; where to find jobs for those now engaged in defense production; who is to own and operate the plants the government is building or paying for; what to do about the federal debt incurred for defense, and what to do about the gold currency base when much of the world's supply of the metal is concentrated in this country.

Government and Public Watch Oil Price Situation

By L. J. LOGAN, Associate Editor

GOVERNMENT officials, as well as the public, have been quick to view with suspicion the increases of the past several months in prices of petroleum products. The government is even questioning advances in prices of crude oil.

Unrecognized or minimized are the extraordinary circumstances, largely outside the control of the industry, which have been responsible for the rising prices, and which threaten to make necessary further advances, even if or when the government assumes full control of prices.

So far, the governmental interest in oil prices has proceeded only to the stage of firmly insisting that it henceforth be consulted before any additional raising of prices—that evidence be presented to show justification for increases in the form of higher costs.

But almost certainly, ahead lies more positive governmental control of the prices of petroleum as well as other commodities. This appears inevitable because of the combination of circumstances in which the government seeks at one and the same time to do these normally incompatible things: (1) to hold down all prices in precaution against dangerous inflation, and (2) to limit supply below full demand, in diverting large or small parts of the available supply to the extraordinary national defense and aid-Britain uses.

In the normal functioning of the economic system of competitive private enterprise, this set of circumstances could have but one result: a bidding upward of prices as buyers more eagerly competed for the available supplies.

Insofar as the system of private enterprise still is permitted to function normally, prices are strongly tending to rise; and the prices of oils are no exception.

Curtailed Movement

The tendency is accentuated in the case of oil prices, in fact, for the reason that the industry has felt, more than many other lines, governmental restriction of supply below full demand. This governmental restriction has been in the form of the diversion of 20 percent of the industry's tankers from coastwise, domestic service to British use. Through that action, available supply, current and prospective, for the populous eastern part of the country has been seriously restricted, and it was only logical and natural that jobbers, dealers, and even the public should bid up prices in attempting to obtain their normal requirements in the face of the prospect of subnormal supplies.

This government action had been superimposed upon an already tight situation in tanker facilities, brought about by sinking and slowing down of boats since the beginning of the war.

Gradually, therefore, developments have reached a point at which it becomes necessary for the government to do something itself toward making possible the holding down of oil prices, if it is to insist that they be held down, as it apparently intends to do.

To preserve the *status quo* of prices, there must be also a preservation of the *status quo* of supply and demand; or else there must be arbitrary governmental price fixing, under which the prices decided upon would have to be justified and supported by placing supply and demand into a relationship that would normally have resulted in such prices.

Requires No Interference

If the government wants oil prices to stay of their own accord where they are now, it must cooperate in making it possible for the industry to satisfy all the demands made upon it; that is, there must be no interference with the industry's producing and transportation facilities and operations, while there should be also effective aid in making it possible for the industry to compensate for the transportation facilities already given up.

If the industry is not to have this opportunity to make supply equal demand, then the normal economic result is to be expected: a further bidding up of prices by the buyers, in a market of scarcity.

And in that event, if the government still insists upon maintenance of the *status quo* of oil prices, then there is only one course that it can pursue: that of arbitrary price fixing.

But it cannot stop simply with the setting up of the prices. Even under a managed economy, price is not independent of supply and demand, and if it is fixed at a given level, then supply or demand, or both, must be adjusted so as to justify and support the price.

The government already has undertaken the arbitrary fixing of prices of some of the raw materials vital in the defense program, and in that connection has had to assert control also over demand, through priorities or rationing, and also has been obliged to control or influence supply by regulating stock piles and providing funds for construction or expansion of plants.

Price Legislation

If the government should undertake to fix prices of petroleum, it similarly would have to undertake at the same time any necessary adjustments of supply and demand. If the prices were fixed at the present levels and supplies proved inadequate, then priorities and rationing would have to be imposed in distributing the available supplies. Moreover, if the prices were fixed at the existing levels and costs of producing and delivering oil continued to rise, as they have been rising, then oil companies would become reluctant or unable to invest more capital in the business, and government financing of additional facilities ultimately would become necessary, although it is to be expected that oil com-

[*Continued on page 16*]

One of the Polish oil fields near Lwow is in the path of the invading Germans. This area has been held by Russia since seizure in 1939.

—International News Photo

Russia's Oil

Far From the Borders of *Germany*

IN attacking Russia, supposedly because of the necessity of procuring sufficient grain and petroleum resources to provide for a long war against Great Britain, Germany is seeking control of the second most important oil-producing country in the world and one regarded as having great potential possibilities.

However, unless able to crush the Soviets quickly to the point they would be willing to come to peace terms dictated completely by Hitler, the Germans will have to conquer a lot of territory to reach Russian fields, especially the principal oil-producing regions of the country. Aside from the comparatively small Polish fields at Lwow that have been occupied by the U. S. S. R. since the German defeat of Poland in 1939, and perhaps three comparatively new partially developed fields in the Ukraine, all of Russia's production is far removed from the present fighting.

By far the largest portion, approximately 90 percent, of Russia's 215,000,000 to 220,000,000 barrels of annual oil production (nearly 600,000 barrels per day) comes from that area lying between the Black Sea and the Caspian Sea. To invade this region, Germany would have to subjugate as much territory as she has added to her eastern boundaries in conquests to date, including Poland, Hungary, Czechoslovakia, Rumania, Yugoslavia and Greece. The rich Russian fields in the vicinity of the Black and Caspian seas are from 600 to 1200 miles as the crow flies from the Prut River, which divides Bessarabia and Rumania, closest point at which Germany launched its war with Russia. Therefore, if Germany is seeking Russia's oil, she probably is hoping for a quick decisive blow because of the distances.

Once having conquered this region, either by complete conquest or dictated peace terms, Germany not only would become one of the world's oil powers, but also would be in position to attack the rich British-controlled Near East oil fields in Iraq and Iran, which are but 200 to 300 miles further south, as well as attacking the Suez Canal from two directions.

Although petroleum statistical data from Russia has been very meager for several years, and especially since the start of the European wars in September, 1939, the Soviet Union is known to have a great many oil fields, estimated by some as 200 in number. These are located in several regions, most important of which are the Baku-Azerbaidjan area, Grozny, Emba, Maikop and Ural-Permian Basin. All these districts, with the exception of the Ural-Permian (sometimes called Ural-Volga), lie in the

vicinity of the Black and Caspian seas and consequently are far from the scene of German attacks.

Closest important producing region is Maikop, or Maikop-Kuban, a distance of 600 miles. Production in this district has been increased until it is producing roughly 7 percent of the country's yield, or about 15,000,000 barrels yearly. Somewhat closer is the small Kerch district, but it is 400 miles from the Germans.

The old Grozny producing district, which has been revived by new discoveries including one, known as Oisungur, which the Soviet press describes as being a sensational field, is 900 miles from the German attack. Grozny yields around 15,000,000 to 17,000,000 barrels yearly. Thousands of stripper wells are said to have been rehabilitated in this region in recent years, and if the new discoveries are as important as some reports would indicate, Grozny may be capable of a much greater output.

The largest of Russia's oil-producing regions is the Baku-Azerbaidjan district, whose fields yield something like 70 percent (165,000,000 barrels annually) of the country's production. Siazan, a new field in this district, evidently is large, as a separate combine has been organized for its development. In addition new deeper production has been found in several of the older fields of this territory.

Therefore, it would appear that Baku would continue to be the country's largest producing region for some time to come. However, the Emba and Ural-Permian are other regions that have had new discoveries and increased production in recent years, and both are considered to have great potential possibilities. The Ural-Permian district especially has made important progress, with the discovery of Syzran, Penza, Buguruslan and other fields. Buguruslan has been described as having a proven extent of 1500 acres from very shallow sands. This region also is 1000 to 1200 miles from the German border.

Because of its remoteness from previous production and location in the center of Russia's largest consuming territory, the strike at Ivanova, near Moscow, is considered very important. As yet it is a small producing area.

All in all it may be said that recent discoveries indicate increased output from Russian fields, and some commentators have predicted that this would occur during 1941. However, the Soviets have not released any material on oil development during the past year.

The Russian-occupied Polish oil

fields near Lwow that are directly in the path of the attacking German army are made up of the districts of Drogobych and Borislav. They were producing about 7500 barrels daily when Russia took them over in 1939. Since that time the Russians are reported to have placed over 800 shutdown wells on production and to have drilled a number of new ones, besides making geological studies of the surrounding area. Even if successful in increasing the output of these more than 2100 wells, it is doubtful if they are making more than 10,000 barrels daily at this time. These fields are but a few miles from the German border.

The Russian fields in the rich grain-producing Ukraine area have been found since 1939, and little information is available on their importance. However, they opened an entirely new producing province. A number of wells are said to have been drilled, the production from which has to be pumped. The latter would indicate they are not exceptionally prolific. They are but 300 miles away from the attacking German army.

Aside from the Ukraine and Polish fields, the Estonia shale-oil-producing district, described as the largest in the world, is in the greatest danger from an immediate German invasion standpoint. Russia occupied this area in late 1939. The Estonian shales are said to contain 43 percent combustible substances, and to have built up a production 1-1/3 million barrels of crude per annum and a smaller quantity of gasoline. It has been recently discovered that similar shales exist in the vicinity of Leningrad, extending the beds eastward and enlarging the reserve which has been estimated as 30 to 40 billion barrels. The shales lie along the Gulf of Finland between Tallin and Leningrad. There is natural gas production on Koksher Island, near Tallin, also.

Although little data are available on Soviet natural crude oil reserves, some estimators have placed them at 5 billion barrels, with unlimited possibilities for future expansion.

Russia has been confronted with several obstacles in its effort to increase production. It appears able to drill the wells, but to have difficulty operating them after they reach the artificial lifting stage. Consequently, output has declined rapidly and it has been necessary to drill numerous wells to maintain production. Another drawback has been lack of pipe-line facilities, but there has been some effort to cure this problem in the past two years.

The Soviets appear well situated so far as refining facilities are concerned, although there are some reports that operating efficiency is very low—even in the more modern plants. The country has approximately 20 plants with a daily crude capacity of 650,000 barrels, of which something like 175,000 or 200,000 barrels represent cracking facilities.

To her own production of 4,544,000 barrels yearly, Germany already has added by conquest or occupation 120,000 barrels from Czechsolvakia, 43,823,000 barrels from Rumania, roughly a 1,250,000 barrels in Poland, 720,000 barrels in Hungary, 500,000 barrels in France; for a total yield of 55,460,000 barrels per year. Should Russia's 215,000,000 barrels per year be added to this total, Germany would have an annual yield of nearly 275,000,000 barrels, or about 12½ percent of the world's output. In addition, Germany now controls about 130 refineries with a daily crude capacity of slightly less than 500,000 barrels, of which perhaps 150,000 barrels represents cracking capacity. Some of these plants have been targets for British bombers and their capacities may have been reduced as a result.

Because of the large refining capacity under its control, it is not believed that Germany is especially interested in the Russian refineries except perhaps from the standpoint of additional cracking facilities. However, most of these refineries depended upon the importation of crude oil, which the war has shut off, and Germany appears to need an additional crude producing capacity of 350,000 barrels per day to keep all its plants busy.

In view of Russia's enormous oil-producing possibilities and the ability of the Germans to achieve industrial efficiency, a successful invasion of the Soviet by Germany might well have far-reaching influences on the international oil picture. Of course, Hitler would have a problem of organizing a very populous country that includes some of the world's greatest saboteurs. If this obstacle is overcome, it might be that Germany would be able to place on the world oil markets enormously enlarged output from Russia's potentially great producing regions.

Oil Prices

[*Continued from page 13*]

panies would cooperate patriotically in the defense program.

There has been some controversy in Congress over the validity of the price controls now being exercised by OPACS, under the unlimited emergency powers of the President; and that agency seeks legislation that would make its control more effective by providing penalties for violations of price ceilings.

There can be little doubt, however, that rigid control of prices will be carried out by the government, if it finds such action desirable or necessary, and in its present and immediately prospective circumstances, the oil industry is encircled by a market situation that inevitably might invite such price control.

Avoidance of oil-price fixing by the government doubtless would be generally preferred by the industry, which has indicated not only willingness but determination to overcome the handicap imposed by the transfer of the tankers and thus to assure adequate supplies of oil to meet all demands, at reasonable prices. This attitude of eagerness to supply all existing demand has been responsible for the prompt and adequate meeting of peacetime needs and could be depended upon to keep supply closely in line with demand henceforth, in the absence of any further serious disruption of the industry's operations.

Similarly, avoidance of oil-price fixing appears desirable from the government's viewpoint, when it is considered that price control means virtually complete ordering of the national economy.

The policy on oil prices that appears mutually desirable for the government and the industry, therefore, is one in which the government would afford the industry every possible opportunity and cooperation in working out itself the means of supplying ample quantities of oils wherever needed, with prices allowed to take care of themselves, as they normally do. Given such opportunity and cooperation, the industry could be depended upon to furnish any needed volumes of oils at fair and reasonable prices, as it consistently has done of necessity through the years, under its highly competitive conditions.

Pipe lines that have been laid across the intersection of the thrust fault trace are constantly being buckled and deformed, and must be cut off and shortened or relaid. The fault trace may be seen extending to the right where another line is being buckled.

Fault Shearing Off Oil Wells

Presents Unusual Problems

By GILBERT M. WILSON, Staff Writer

PROVING that the geologic forces and earth movements that accompany the forming of oil-bearing structures or entrapments are by no means static, an investigation into the cause of the collapse and shearing off of oil-well casings below the surface in a California oil field has disclosed the existence of an active thrust fault, the overriding portion of which is moving at the average rate of approximately one to 1½ inches per year.[1] Between 25 and 30 pumping wells, within the past approximately 10 or 15 years, have been affected, damaged, and many even abandoned prematurely because of the relatively rapid movement of this thrust fault.

Certain preventive and remedial steps that have been taken by one of the principally affected operating companies in the area, are unusual and interesting.

A striking surface evidence of the earth movement consists of a well defined, recent scarp on the south flank of the low range of hills that represents approximately the structure of the Buena Vista Anticline in Kern County, California.

Oil and water lines that have been laid across this surface trace of the fault are constantly being deformed and buckled, and at regular intervals have to be shortened up and repaired or re-laid.

The visible fault trace, an abrupt scarp of from 2 to 4 feet in height, extends for approximately 1½ miles in a northwesterly direction and the fault plane dips northeasterly or into the south flank of the structure, at an angle of approximately 25 degrees.

While the greatest shearing action and damaging of casings apparently has been most pronounced closer to the outer edge of the thrust fault, some indications of a squeezing action on casings has been noticed recently as deep as 1200 feet from the surface where wells drilled some distance back from, and in the down-dip direction, intersect the fault plane.

Bent surface pipe lines, and shifting out of line of certain telephone poles in the same vicinity originally probably were thought to be no more than evidences of a local landslide until it was first noticed that certain tools, bailers and later even tubing would no longer pass through the oil string in certain wells in the immediate vicinity.

Following discovery that a number of wells, at varying depths below the surface, apparently were being seriously affected by the fault, a closer survey was made which disclosed that unless the problem was dealt with in a short time many more wells would have to be prematurely abandoned. This applied particularly to the wells that intersected the fault at a shallower depth or nearer the point of outcrop of the fault plane. On the basis of the findings, the rate of slip along the fault plane seems to decrease with increasing depth.

[1] Rate of movement was arrived at by the known deformation of well casings and buckling of surface lines by T. W. Koch, and reported in A. A. P. G. Bull. Vol. 17, No. 6, June, 1933, "Analysis and Effects of Current Movements on an Active Fault in Buena Vista Hills Oil Field, Kern County, California."

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Max. Counterweight Effect at Max. Polished Rod Stroke, Pounds	2476	6473	4860
Peak Torque Rating at 20 SPM, Inch lbs.	6360	40200	40200
Overall Gear Ratio	26.0	29.2	29.2
Pitch Diameter of V-belt by Belt Section, Inches	12x2A	18x3C	18x3C
Well End Working Centers, Inches	24	51	51
Walking Beam Size and Weight, CB Section	6x12 lbs.	12x36 lbs.	12x36 lbs.

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API Walking Beam Rating, Inches	3200	4300	6725	8900	8900	9125	9125	12750
Peak Torque Rating, Inch lbs. at 20 SPM	6360	11050	24300	40200	40200	57200	57200	76500
Overall Gear Ratio	26.0	29.5	29.2	29.2	29.2	29.8	29.8	29.6
Max. Polished Rod Stroke, Inches	16	20	28	34	34	42	42	48

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API Walking Beam Rating, lbs.	15000	18850	18750	24000	24000
Single Reduction Type:					
Peak Torque Rating, Inch lbs. at 20 SPM	124000	170000	238000	238000	303000
Overall Gear Ratio	10.2	9.7	9.4	9.4	9.32
Double Reduction Type:					
Peak Torque Rating, Inch lbs. at 20 SPM	113000	139000	200000	200000	—
Overall Gear Ratio	30.8	26.8	28.3	28.3	—
Maximum Polished Rod Stroke, Inches	54	54	64	72	72

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Where it is not convenient to relay or be constantly cutting and welding certain lines that cross the fault scarp, holes are dug around the lines and sleeve-type couplings are installed to permit the shortening action set up by the movement of the active fault.

The most serious damage to well casings appear to be confined primarily to wells that intersect the fault at depths shallower than 800 or 900 feet.

While several methods have been used in coping with this problem, the most successful form of relief used thus far consists of sinking a shaft around the casing of wells whose points of contact with the fault are not greater than approximately 200 feet in depth. The shafts are dug by hand and are carried down a short distance below the fault intersection, after which the damaged casing is removed. The shafts are lined with either 2x6-inch plank lagging or 72-inch welded stove pipe, and then covered with a metal hood. The offset position of the shaft provides for a maximum amount of the movement of the moving upper portion of the thrust fault before the casing would again be damaged or sheared off.

The new section of casing that is used to replace the sheared and bent section extending from just below the fault to the surface is not landed in a head, but is centered below the derrick floor by means of ⅞-inch tie rods and turnbuckles anchored radially to the derrick sub-structure.

In a particularly interesting case of one such repaired well, where the 11¾-inch surface string intersected the faut at 170 feet from the surface, the casing was found, upon removal from the shaft, to have a maximum offset or bend of 21½ inches in the total length of casing from the surface to a point approximately 20 feet below the fault zone. A further impression of the severe bending and flattening done to the well casing may be seen in that an offset of 13¼ inches from the point of intersection with the fault, to a point just 4 feet below was measured on the removed damaged joints.

The work on this well was begun shortly after it was found that the tubing catcher could not be pulled up through the oil string at its point of intersection with the fault. As soon as the shaft was dug, the casing string was partially straightened by the use of hydraulic jacks and saddles in conjunction with a long steel I-beam. The tubing catcher and remaining tubing string then was recovered from the well, after which the casing in the exposed interval was removed and replaced.

This shaft, measuring 6 feet by 5 feet outside dimensions was supported by 6x6-inch and 8x8-inch timbers, and lagged with 2x6-inch planking.

In another well where the fault was intersected at a point 96 feet down from the surface, a circular shaft was dug and lined with 72-inch steel stovepipe. As each joint of this light pipe was welded on, the string was forced down by means of hydraulic jacks.

Another form of relief, although quite slow and expensive, has been used on certain wells which are not too badly injured, and which intersect the fault plane at depths that prohibit the economical use of shafts. A wash-over shoe, of the largest size that can be handled with the rotary equipment being used, is employed in washing over the outside string of casing down to and including the affected joints. The joints then are backed off, after which new joints are screwed back on.

Since most of the wells are provided with at least two strings of casing, the surface and oil strings, another practice, although more of a temporary measure, has been resorted to in a few cases. This consists of cutting off and removing the inner string of casing down to a point slightly below the fault plane intersection. The tubing is thereby provided with several inches more space in the surface string before it approaches the point of becoming pinched in the casing.

Tubing catchers are not run on tubing strings because of the existing danger of losing the well or at least causing considerable expense. On certain wells, a definite schedule is maintained in pulling the tubing every two months in order to run feelers into the casing and make sure that the tubing is in no immediate danger.

Upon pulling the 2½-inch tubing out of one well, each joint was found to have a permanent 11-inch bend, which was suffered as it was pulled through the bent and flattened interval in the casing.

While 2½-inch tubing normally is used, the size often later is reduced down to 2-inch, and the collars even chamfered as an effective diameter of the casing is reduced by the shearing action.

If the well production and depth to the fault make it uneconomical to attempt to apply the redrilling or shaft sinking methods in order to save the well, the well is abandoned by cementing off the formation through the tubing.

In the latter part of 1932 the United States Coast and Geodetic Survey established closely spaced triangulation points along the course of this local fault in order to more accurately follow and plot the course of the overriding fault.

Practical Hints for Care of

Multi-Cylinder Pumping Engines

By FLOYD SWINDELL, Consulting Engineer

ASSUMING that the pumping equipment originally purchased was properly selected and installed on a correctly designed foundation, a pumper need follow only a few simple rules to materially extend the economic life of multi-cylinder high-speed gas engines.

Generally speaking, these rules are:

1. An ample supply of good gas at proper pressure in the case of natural gas operation, and a supply of good quality gasoline where this fuel is used.
2. Good circulating water, or if the water supply is bad, the proper treatment of it to avoid harmful effects.
3. Proper lubrication.
4. Proper attention to mechanical adjustments.
5. Proper engine speeds with regard to minimum speed fluctuation and to position on torque curve.
6. Proper maintenance of equipment that is being driven.

In enumerating these rules no attempt has been made to arrange them in the order of their importance, since it is doubtful if one takes precedence over the others. If these suggestions are placed in execution it is safe to predict a satisfactory economic performance from any well designed multi-cylinder engine. However, it must be remembered that unless the proper engine for the particular job to be performed is selected initially it will be exceedingly difficult, if not entirely impossible, for the pumper to obtain satisfactory performance from the equipment.

Good Fuel at Proper Pressure

The importance of good gas, free of moisture, foreign matter and corrosive elements, cannot be overstressed. One of the features of proper fuel condition is the use of an efficient air cleaner. If this cleaner be of the oil-bath type, care must be exercised that a good clean light-weight oil is used, that this oil is changed at the proper intervals and that at the time of changing oil to remove all accumulated material from the oil reservoir. Just what the interval should be between oil changes will depend upon atmospheric conditions in the area in which the engine is being operated. In some areas the atmosphere is relatively free of solids throughout the year while in others, particularly during certain parts of the year, the cleaner may pick up a considerable amount of solid matter within a few hours. In most areas the greatest amount of trouble may be expected in the fall of the year. These solids usually will include dust, leaf mulch or leaf fragments, very small blades of grass, lint from some types of plants, etc. It has been suggested that the air cleaner should not be mounted so that the air blast from the fan strikes it.

Assured that the air entering the carburetor is clean at all times, the operator should then be sure that the air and gas are being properly injected. Many multi-cylinder engines are being purchased with combination natural gas-gasoline carburetors, the carburetors being equipped with some type of regulator. It is the general purpose of the combination carburetor that gasoline be used only in emergencies or for starting, particularly if the engine is equipped with natural gas cylinder heads. If an engine is in good condition and is properly adjusted it should not be necessary to have to use gasoline for starting where normal operation is on natural gas. Regulators usually are designed for from six to eight ounces pressure, gas pressure operating on one side of a diaphragm and vacuum operating on the other. If the gas pressure is allowed to exceed the pressure for which the regulator is designed, not enough vacuum can be created at cranking speed to open the regulator valve and the engine will not start on natural gas even in warm weather because it is getting no gas. Some engines are operated without a sufficient supply of gas and at pressures that are too low while others are given too much. In either case the owner may expect excessive trouble with exhaust valves and valve seats. A person of average intelligence can be taught within a short time to properly adjust the carburetor.

Circulating Water

In some areas it is difficult to easily obtain an ample supply of naturally good water and there are many instances where the pretreating of bad water is questionable economically. In any instance where the water is bad and is not given some kind of conditioning treatment difficulty may be expected. Some of the materials that are deposited on metal surfaces within the engine are effective insulators and will greatly retard heat dissipation. It is well known that proper heat dissipation is a requisite of efficient engine operation and that lack of it will result in trouble. The materials may be deposited to such an extent that the water jackets may be completely blocked or it may entirely fill the spaces between cylinders so that normal expansion cannot take place when the engine is warmed from atmospheric to operating temperature. Excessive heating, ring and cylinder-wall wear may be expected, along with other troubles that usually follow this type of wear.

Where the water is known to be bad it is good practice to remove scale at regular intervals. This interval will vary depending upon the extent to which the water is bad, the number of hours of operation and the general condition of the engine. The most effective way to remove these deposits is with warm, dilute inhibited hydrochloric acid. Composition of the deposited materials may vary widely but means are available for accurate determination of their characteristics. If the operator encounters scale that cannot be removed with the regular inhibited acid he should consult someone who is equipped

at least to make a qualitative analysis of the material.

Proper lubrication is taken herein to mean the use of a good quality lubricating oil, properly distributed to the various moving parts of the engine and the proper injection of grease in the water pump, clutch and other parts requiring a highly viscous lubricant. Some operators still have not accepted the general belief in the value of a good lubricating oil filter. It is not difficult to prove that a good filter is as essential to satisfactory operation as is a good oil. There are several types of filters on the market and any one of them will prove satisfactory if the filtering elements are properly changed. The question of when to change crank case oil is one upon which many widely differing opinions may be obtained. Apparently no definite rule can be generally applied even in the same area and in the same make and model engines. One rule that is safe and usually will result in reasonable economy is to change when the oil starts changing from its original color and at this time to change the filtering element or material.

Some engines, due to their design or to operating conditions or both, have the characteristic of excessive water accumulation in the crankcase. It is believed that the engine manufacturers should provide a suitable means for draining this water from the crankcase but in cases where no provision has been made by the manufacturer, and this is true almost without exception, the operator can provide a drain cheaply. The ordinary crankcase sludge is a difficult oil-water emulsion and any engine may be expected to sludge if water is not kept from the crankcase. In cold weather, when engines are shut down for any appreciable time as is the case with many pumping engines, water should be drained from the crankcase before operation is resumed. Water accumulates in the crankcase during these shut-down periods by condensation and if not removed will form sludge within a short time after operation is resumed.

One of the major factors in proper lubrication is the maintenance of proper operating temperatures, Most manufacturers now recommend that oil-field engines be operated at not less than 160° F. There are some systems now available that permit operation up to the boiling point of water. It is common in cold weather to find engines operating at but slightly above 100° F., in which event the lubricating efficiency is low. Under these conditions excessive wear may be expected, particularly on piston rings and cylinder walls. Several means are offered to combat this problem, among them being the plain thermostat, the bypass type thermostat, the thermostatically controlled shutter which is placed in front of the radiator core, steam cooling and vapor cooling. If a thermostat is to be depended upon it should be cleaned regularly. It is good practice occasionally to check the temperature at which the thermostat is opening. This may be done by the use of a thermometer and a vessel of water which is heated until the thermostat opens and the temperature observed.

The question of how often and how much to grease the clutch and water pump is another variable. Recommendations of the manufacturer should be followed in this respect. An excess of grease in the water pump will result in clogging of the radiator tubes and eventually of the entire water system. Excessive greasing of the clutch pilot bearing and throw-out collar will result mainly in a waste of the grease. Where more than one person is to be in charge of engine operation it is a wise plan for the superintendent or foreman to designate the workman on some definite tour to do all greasing. One case has come to the writer's attention where three tours were being worked per 24 hours and each pumper was doing a regular grease job. Experience has taught, however, that those who grease too much and those who do the job properly are in the minority.

Mechanical Adjustments

There are three mechanical features that the pumper can easily learn to adjust: keep the spark plugs clean and properly spaced; keep the tappets in proper adjustment, and keep the engine in time. Recommendations of the manufacturers should be followed in each instance. Many oil companies employ men who do nothing but mechanical work and it is their duty to take care of the mechanical adjustments on all engines. Usually in this plan the pumper never learns the few simple things that should be done and if the company mechanic is not available an engine may be permitted to operate improperly for a considerable time. It would seem a wise plan for any operator to see that the pumper is taught to make these minor adjustments and to depend upon the company mechanic to act as an instructor and to do the major overhaul work.

Engine Speeds

The problem of proper engine speed involves two factors; the application of the engine at a speed which does not produce an excessively high rate of piston travel and a speed which is above the point at which an engine becomes mechanically inefficient; and at a speed which falls favorably on the torque curve. These factors usually are involved in the selection problem and have to be determined at the time the engine is purchased. However, changing well conditions often bring about needed changes in speed and it is therefore believed that the pumper should be familiar with the problem. Most manufacturers recommend a speed that will produce not to exceed 1200 feet per minute piston speed on an oil well pumping application and it is common practice to try to obtain not more than 1000 feet per minute piston travel. Some engineers favor very large flywheels with a resultant minimum of speed fluctuation throughout the pumping cycle. Others advocate variation of the engine speed and power to conform to the power requirements at various points on the pumping cycle. These are questions that are debatable and they will not be discussed herein due to space requirements.

Figure 1 is a graph upon which is presented the torque and horsepower curves for three popular makes of oil-well-pumping engines. All three are four-cylinder, four-stroke-cycle engines falling in the 200- to 225-cubic-inch piston displacement class. Engines A and B are identical in piston displacement and engine C is approximately 8 percent larger than the other two. It will be noted that all three develop peak torque between 1000 and 1200 revolutions per minute. In a normal pumping well the load is greatest for that part of the cycle from the beginning of the upstroke to a point about one-half up from bottom. During this part of the cycle an engine with a regular sized flywheel will lose speed and it is not uncommon for this loss to amount to as much as 200 revolutions per minute. Assume that for

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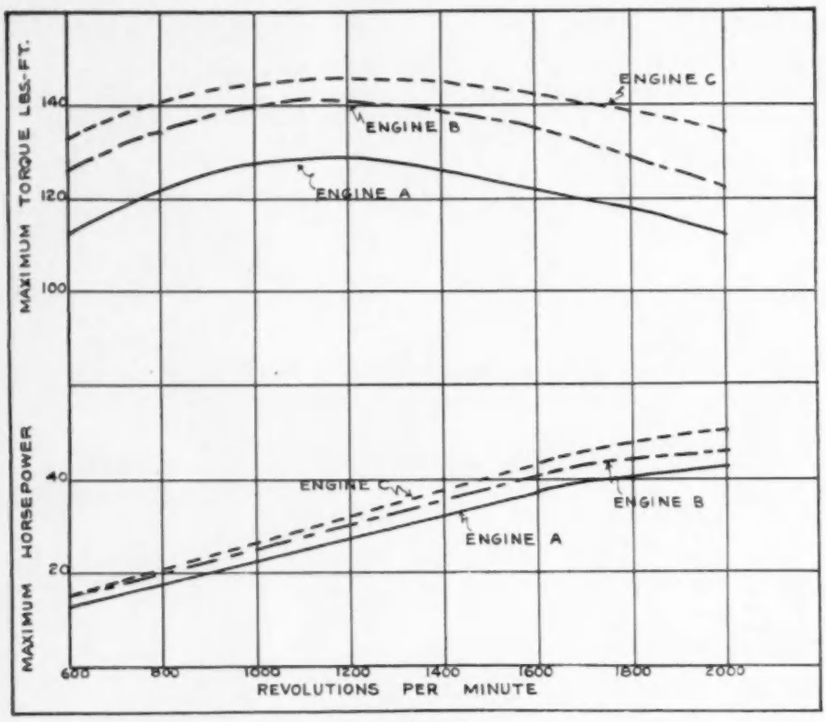

FIGURE 1

the lighter part of the cycle any one of three engines have been operating at 1300 revolutions per minute and that the speed loss is 200 revolutions per minute or down to 1100 revolutions per minute. It will be noted from the graph that in this case the horsepower has been reduced by approximately 16 percent. However, the engine has reached a favorable point on the torque curve and its ability to do work has been slightly increased despite the loss in horsepower. Now assume that through the lighter part of the cycle the engine had been running at 1100 and it slows down to 900 revolutions per minute. A loss of approximately 20 percent in horsepower has been sustained and a point considerably below peak torque has been reached. The engine therefore has lost horsepower and also the ability to do work. It is not always possible to operate at a speed above peak torque but it should always be done when possible.

Naturally, if the driven equipment is not in good mechanical condition, the engine may suffer. One factor that is of vital importance in this respect is the keeping of beam wells in proper balance.

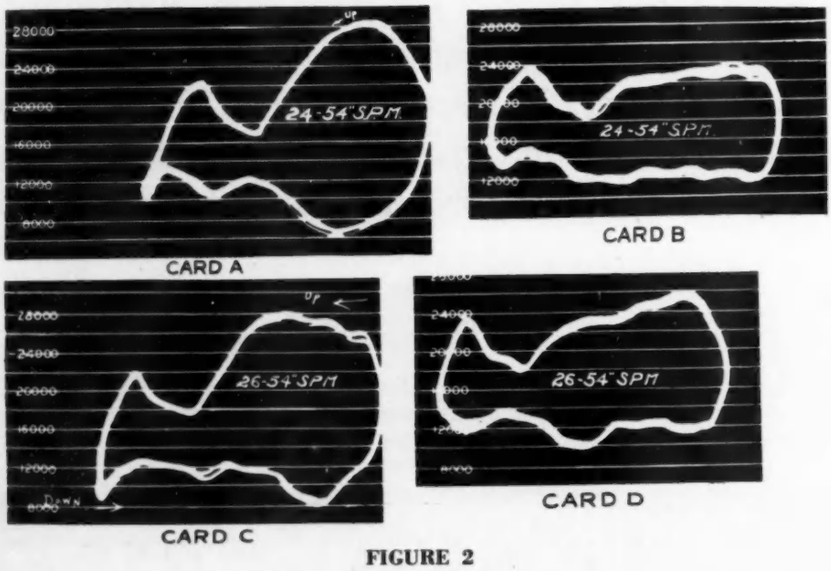

FIGURE 2

It is not unusual to find wells being operated at engine speeds of 1000 rpm on the downstroke and dropping as low as 600 rpm on at least a part of the upstroke. When a condition of this kind is encountered it should be immediately corrected and it usually can be done simply. Figure 2 presents reproductions of four polished-rod dynamometer cards taken on a well in one of the deeper pools in the northern Mid-Continent. Cards A and C were taken with the well in an unbalanced condition and Cards B and D were taken after the placing of additional counterbalance weights on the beam. Length of stroke was the same for all the cards. Strokes per minute were the same for A and B and for C and D. It will be noted in Card A that the minimum load was approximately 7000 pounds and the maximum approximately 28,000 pounds or a range of 21,000 pounds through the cycle. After weight was added to the beam the minimum load, which occurred on the downstroke, was increased to approximately 12,000 pounds and the maximum load reduced to approximately 24,000 pounds, a variation of 12,000 pounds. Change of operating speed did not materially change the card characteristics. In this case the downstroke velocity was greatly retarded and the force necessary to stop the sucker rod string and reverse its direction was reduced. It is easy to see in this illustration that engine operation not only would be much smoother but that the total load was reduced almost 15 percent.

It should be pointed out there are wells that cannot be kept in proper balance due to changing well conditions. Some wells produce slugs of gas that may continue for only a few minutes or they may last several hours. If the well has been balanced for the non-gaseous period it will be out of balance while the well is producing gas. To meet this problem it probably is best to determine which of the two sets of conditions persist the greater part of the well's daily pumping period, and balance for that condition. The well then will be out of balance for the other condition and it usually will not be practical to try to change counterbalance as the well condition changes over short periods. However, the well condition as a whole will be better than had no attempt been made to balance for any part of the pumping period.

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PART 5
The Torque and Lead Requirements for a Given Production

By EMORY N. KEMLER
Associate Professor, School of Mechanical Engineering, Purdue University

THE size of pumping unit structure required is dependent on the peak load which must be carried and on the amount of counterbalance necessary. The size of reduction unit required normally is dependent on the peak torque which must be transmitted. Both of these factors are normally functions of the peak load. First an approximate relation between load and torque will be determined in this discussion.

The calculation of peak load is more difficult than the determination of the horsepower (see part 4 of this series) because of the large number of variables involved. The formula proposed by C. J. Slonneger and recommended in A.P.I. Specifications 11E appears to give reasonably safe values for determining the size of unit required. A comparison (see page 90, A.P.I. Drilling and Production, 1939) between values given by the Slonneger formula and those from actual tests has shown that the Slonneger formula gives a value which is not far from an average of the higher values, which probably represent maximum conditions.

The danger and difficulty in using some average formula or from using a load formula which gives the peak load is illustrated in Figure 1 which shows an actual measured and the calculated peak torque as determined from a dynamometer card. The calculated card is seen to follow very closely the actual measured torque and represents the average value of the measured torque curve. This curve has superimposed on it a vibration which will not always be present so that it would be expected that a very good general correlation would in general be obtained between measured torque and the peak torque as calculated from a dynamometer card.

The torque cards shown in Figure 1 point out very clearly the danger which can result from using peak load as a basis for torque calculations. In the case shown the peak torque during the upstroke does not occur at the time of the peak load but rather at the 60° position where the load is about 3000 pounds lower than the peak load. In this example the peak torque actually occurs on the downstroke of the polished rod and at the point where the sucker rod or polished road load is zero. In this case the well is over counterbalanced and the torque to drive the counterbalance on the downstroke exceeds the net torque required on the upstroke.

Because of the many factors involved, a general formula such as that proposed by Slonneger is satisfactory for use in determining average peak torque requirements. While a better formula is to be desired, the one now available will be used in the following discussions.

Counterbalancing is the most important item to be considered in determining the peak torque to be carried by the equipment. As has been pointed out, the peak torque for the example shown in Figure 1 is caused by the counterbalance. In most cases, however, the peak torque probably occurs on the pumping stroke and will be higher than necessary because of failure to use the proper amount of counterbalance. Of the items in equipment operation which are important none is easier to control and yet probably so neglected as the question of counterbalancing. As a rough approximation it can be said that a well operating without proper counterbalance will impose in the equipment a peak torque which is at least

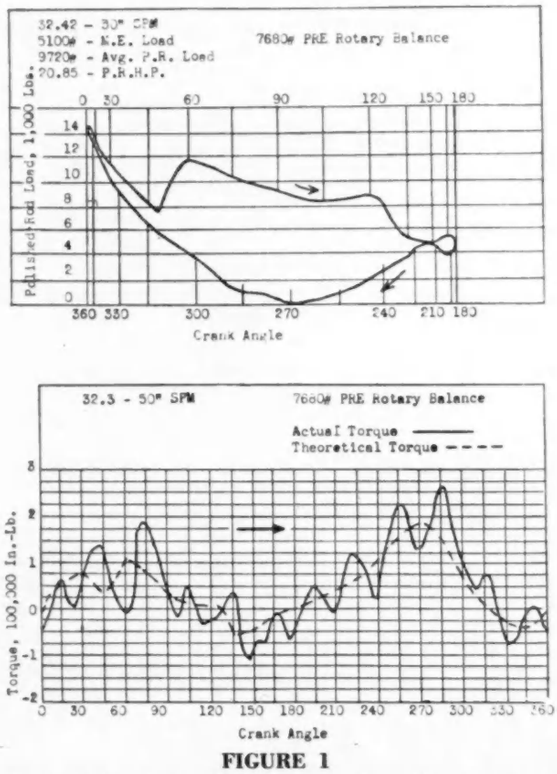

FIGURE 1
Theoretical and Actual Torque Card and Dynamometer Card.

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Tensile load capacities in above illustration on basis of 60,000 lbs. per sq. in. plates.

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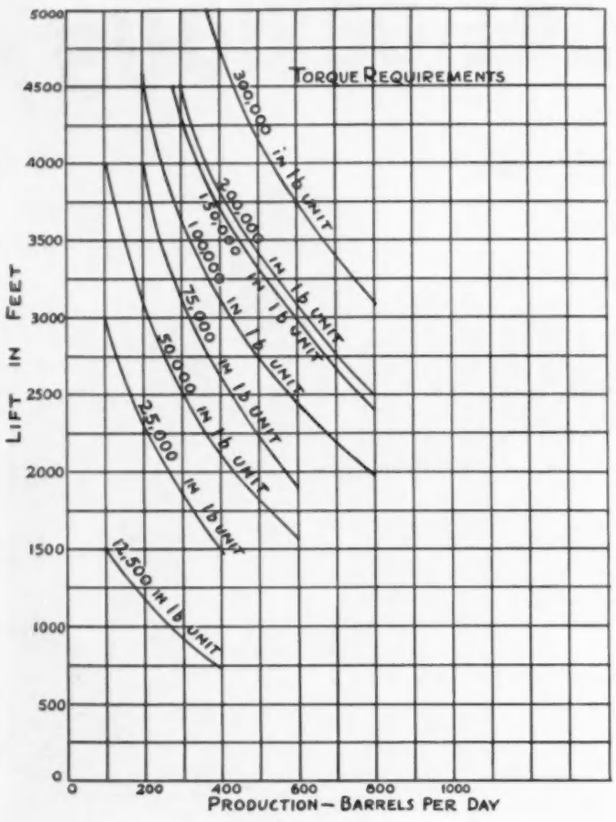


FIGURE 2

twice the value with proper counterbalance and for light loads may be several times this minimum value.

The determination of the proper counterbalance by calculation is for all practical purposes impossible. The calculation of the peak torque requires that the load-displacement or dynamometer card be known. The equation for such a card would be difficult to work with if it were known. Since no one has worked out a simple formula for such cases the complete analytical treatment is obviously impossible. The next method would be to obtain a dynamometer card and from it work out the proper amount of counterbalance. Here again some difficulties arise. The work of determining the proper amount of counterbalance takes considerable time and involves the time element of several days waiting under normal conditions.

Fortunately, there are several practical means of determining in the field whether or not a well is properly counterbalanced. The technique to be used will, of course, depend on what is to be accomplished by counterbalancing. For example, it is possible to counterbalance to keep the horsepower on the up and down strokes equal, to control the up and down stroke times, to make the peak horsepower a minimum or to keep the peak torque a minimum. Since this latter effect is the measure of loads carried by equipment it is desirable to keep it at a minimum. The peak torque can be measured approximately by adjusting the clutch so that it just slips. If it slips equally on the up and down strokes the peak torque is probably about equal. Another method which can be applied where the engine is firing uniformly is to use a recording tachometer. If the speeds are about equal on the up and down strokes it indicates that the power requirements are about the same on each half of the cycle. In both of these cases the shape of the dynamometer card will influence the value to some extent. The slipping of the clutch appears to have the best possibilities and is the easiest and simplest to apply.

In order to have some basis for arriving at a reasonable and simple answer without excessive work, an analysis of torque and load requirements on the basis of the Slonneger formula will be used. No analysis can be any more accurate than the assumptions made. In this analysis, therefore, the restrictions imposed by this formula and the assumptions made with respect to counterbalance will limit the range of application of the data. The assumptions made are in general accordance with operating practices so that the results should be in reasonable agreement with average operating conditions.

The maximum well load as it influences torque as given by the Slonneger formula is

$$P = (Wo + Wr)\left(1 + \frac{LN}{5400}\right) \quad \ldots\ldots(1)$$

where P = polished rod load
Wo = weight of oil column on plunger
= .34 Sd^2l
Wr = weight of sucker rods
= kl
L = length of stroke in inches
N = number of strokes/minute
l = well depth in feet
d = plunger diameter in inches
K = constant depending on sucker rod string (see Table 1 for values)
S = specific gravity of fluid

If the weight of the sucker rods are assumed to be counterbalanced, the net or unbalanced load P_u will be given by the formula

$$P_u = (Wo + Wr)\left(1 + \frac{LN}{5400}\right) - Wr$$

$$= Wo\left(1 + \frac{LN}{5400}\right) + \frac{WrLN}{5400} \quad \ldots\ldots(2)$$

$$\frac{LN}{5400} = \frac{Q}{630ed^2} \quad \ldots\ldots(3)$$

where Q = production in barrels/day
e = volume efficiency of pump

$$Wo = .34\,S\,d^2\,l \quad \ldots\ldots(4)$$

$$P_u = .34\,S\,d^2\,l\left(1 + \frac{Q}{639e\,d^2} + \frac{K\,l\,Q}{630\,e\,d^2}\right) \quad \ldots\ldots(5)$$

If e is assumed as being 70% and S = 1.0 and further, if $d = \left(\frac{KQ}{126}\right)^{1/4}$ the above equation will reduce to

$$P_u = (.055\sqrt{KQ} + .0075Q)l \quad \ldots\ldots(6)$$

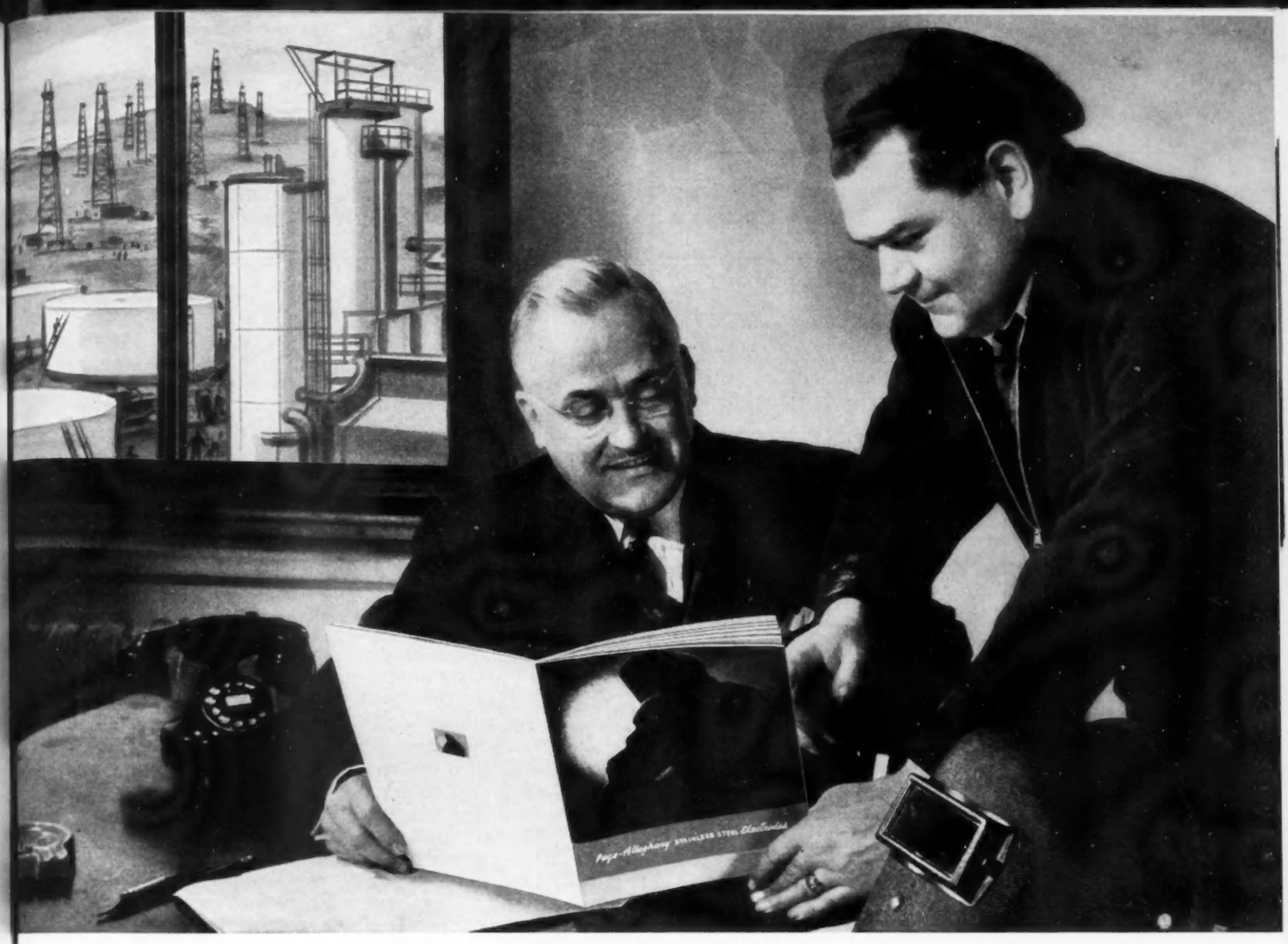
The peak torque will be given by

$$T = P_u \times \frac{L}{2} = [.055\sqrt{KQ} + .00075Q]\,l\,\frac{L}{2} \quad \ldots\ldots(7)$$

To arrive at some specific values the following values for L have been assumed for the various capacities or units or T values

T = 300,000	L = 64
T = 200,000	L = 54
T = 150,000	L = 44
T = 100,000	L = 36
T = 75,000	L = 36
T = 50,000	L = 30
T = 25,000	L = 24

Substituting the above values in successive formulas it is possible to arrive at the approximate curves shown in Figure 2. While these curves will not be exactly correct they will give values as correct as any general formula can give them. In any case the values must be checked against specific data. It should be kept in mind that in the derivation and



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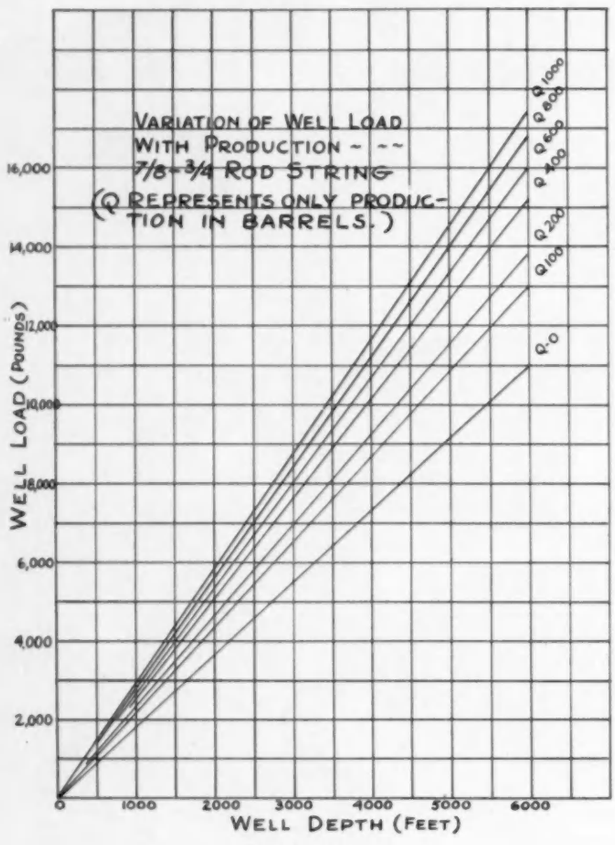


FIGURE 3

calculation of these curves that certain rod and plunger sizes have been implied. If different values of plunger and rod sizes are used then the values must be corrected. Also, if local conditions are such that a different amount of counterbalance is used, the results will be affected also. The values used should, however, represent average conditions.

The approximate size of reduction unit necessary to produce a given amount of fluid from a given depth can, therefore, be selected directly from Figure 2. Also, the capacity of a given sized unit when operating from any given depth can be determined from this figure. It likewise gives the depth from which a given sized unit can produce a required quantity of fluid. This chart is particularly convenient for estimating purposes.

If the Slonneger formula is used as a basis for estimating the maximum well load which in turn is used as a basis for selection of the size of structure necessary. This formula as given in equation (1) could be the substitution of equations (3) and (4).

$$P = (.34\ Sd^2l + Kl)\left(1 + \frac{Q}{630ed^2}\right) \quad \ldots\ldots\ldots\ldots (8)$$

If we further assume that for the average condition that

$$d = \left(\frac{KQ}{126}\right)^{1/4} \quad \ldots\ldots\ldots\ldots\ldots\ldots (9)$$

then this equation reduces to (S = 1.0 and e = 70%)

$$P = (.0303 + .02551)\ \sqrt{KQ} + (Kl + .000077SQ)$$

$$= (K + .0254\ \sqrt{KQ})l \text{ approx.} \quad \ldots\ldots\ldots\ldots (10)$$

If we assume for normal maximum conditions that the well is producing from or near bottom and that the pump efficiency, e, is 70 percent this equation can be reduced to a relation involving only P, Q, and K. Table 1 lists the value of K for various sucker rod strings, including tapered strings. A plot can then be made for P as against the production, Q, for various sucker rod strings. Figure 3 shows such a plot. This figure gives a very convenient method of determining the well load when producing from or near the plunger depth. By expressing the load in terms of the production, estimates are relatively easily made. The data given in Table 1 are also very convenient for the making of sucker-rod-weight calculations in the case of tapered strings.

TABLE 1

Average Weight of Sucker Rod String Per Ft. (K)

Sucker Rod String, Inch	Percent of Length of Each Rod Size				Aver. Wt. per Foot of String
	1 Inch	7/8 Inch	3/4 Inch	5/8 Inch	
1	100	....	....	....	2.62
1—7/8	30	70	....	....	2.44
1—7/8—3/4	30	32	38	....	2.11
7/8	....	100	....	....	2.26
7/8—3/4	....	30	70	....	1.83
3/4	....	....	100	....	1.64
3/4—5/8	....	....	35	65	1.32
5/8	....	....	....	100	1.15

Aside from their value for estimating purposes the curves shown in Figures 2 and 3 are helpful in obtaining some general information concerning equipment capacities. The data shown in Figure 2 shows the general spread of unit sizes based on torque capacity when plotted against production expected. While there are necessarily many shortcuts made in arriving at these curves they serve as a very real basis for making the first guess as to size of reduction gear or unit requared. These curves also bring out the effect of stroke length on what it is possible to get out of a pumping unit. It can be seen, for example, that a 150,000-inch-pound unit with a 44-inch stroke can produce about as much fluid as can a 200,000-inch-pound unit operating on a 54-inch stroke. The shorter the stroke with which a unit operates, the higher fluid lifting capacity it will have. There are however, practical limitations with respect to speed and plunger size which limit the length of stroke which can be used. To get the most out of a piece of equipment the stroke should be kept as short as practical considerations of plunger size and stroke length will permit. On existing equipment the stroke should also be kept down as far as is practical since this will give lower loads and stresses and result in longer life. The plotting of the data as given in Figure 3 against production gives a better view as to how loads will vary with production under the conditions set out in deriving the equation used.

The remarks given have been inferred as applying to gear or chain reduction units. They will apply equally well to a belt-driven counter-shaft-type rig front. In this case the results of keeping the length of stroke down will be to give a lower belt pull requirement. In general a reduction in length of stroke will require an increase in speed which will mean in turn an increase in belt speed (feet per minute) and a decrease in effective belt tension. For drives giving belt trouble a careful check should be made on the length of stroke to see if conditions would permit a shortening of the stroke length.

The next installment of this series, Part 6, will discuss the selection of economic equipment sizes for a water drive pool.

High-Speed Drilling Chain Paces Deep Hole Demands

By ELTON STERRETT, Equipment Editor

DEEPER and faster drilling, with constantly augmenting drill-stem loads and greatly increased rotary-table-torque requirements, pyramid demands made on drilling chain. Rotary drive chain, in addition to adequate provision against shock stress, must be designed and fabricated to stand up under long runs at maximum speed, yet possess ample reserve strength to withstand sudden starting and stopping of the table.

Starting and reversing heavy loads on the drawworks, even under careful handling by the driller, throw shock overloads on chains many times those borne by equipment with shorter, lighter pipe strings. Sustained high speed operation of the drawworks, while coming out of the hole with two miles or more of drill stem, imposes on drive chains extended running under severe load conditions, demanding the utmost in service and lubrication.

Attempts to meet deeper drilling demands by increasing the strength of the chain through making it larger also added to the unit weight, thereby stepping up the impact of each link against the sprocket tooth. This increase in impact, already near the critical value in existing chain designs, ruled out chains which were strengthened at the expense of added weight.

Overall limits of API chain, standardized for each approved size, place a maximum or controlling dimension in each specification beyond which sizes may not be increased in the effort to provide more material and thus step up the cross section and bearing area, while reducing unit pressures or permitting the carrying of greater overall load without excessive unit values.

On the API-4 chain the controlling dimension may be taken as the 1¾-inch outside diameter of the roller. Within this limit must be provided metal for the roller, with thickness sufficient to permit heat-treatment and to withstand peening and flattening under service impacts; the bushing, sturdy enough to maintain spacing between side plates and provide necessary rigidity against twisting or spiraling, and thick enough to permit finishing and hardening against wear on both inside and outside cylindrical surfaces; and the pin, large enough to present adequate bearing surface for its working contact with the bushing, of sufficient diameter to resist shearing at the side plates, and possessing ample rigidity to maintain true cylindrical form under heaviest loads. In addition to the material or metal requirements for the three working units within this 1¾-inch circle, provision must be included for two clearances, between roller and bushing and between bushing and pin, if the link is to secure the lubrication enabling it to give maximum service life.

With dimensions of stronger chain rigidly circumscribed by specifications and existing clearances in drawworks and rotary drives, chain manufacturers have carried even further their investigations into the suitability of special alloy steels of highest physical properties and have adapted their designs to utilize the best materials available. That this search has been successful is proven by the ability of a chain weighing 16.5 pounds per running foot to carry an ultimate strength rating of 185,000 pounds, with ample safety factor to meet any rig emergency.

Use of specialized alloy steels, permitting hardening and heat-treating to bring out the desired wear-resisting surface and yet retain the tough, elastic core, enables the manufacturer to produce a chain which, given proper care and adequate lubrication, will outlast much of the machine it drives. This is especially true of the chains in the drawworks of two-unit rigs with individual table drive, which normally operate but a small part of the time the rig is in operation, and in which the wearing or service characteristics may be subordinated to the requirement of adequate strength to resist the reversal shocks and pick-up loads when handling heavy pipe strings. The table drive, running for long periods at loads well below maximum, must be built for continuous operation, with the advantages of lighter weight and reduced sprocket impact outweighing the possible slight delay of an occasional chain break.

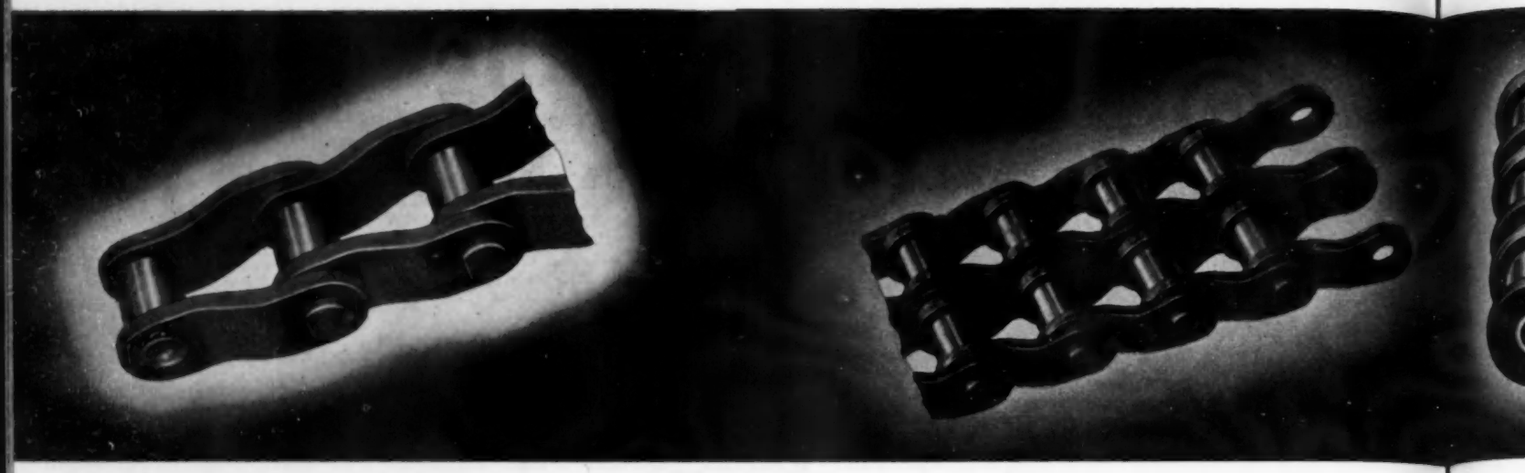
It would appear advantageous, from the replacement or warehouse viewpoint, to have all drives on a rig using the same chain, but due to wide variance in types of service required of them, economy and effectiveness are best served when

Composite Equipment Review—V

Drilling chain, hampered by rigid specifications and already at the point where added weight imposes added stress disproportionate to strength thus gained, turns to design refinements, precision manufacture and the use of highest types of alloy steels to stay ahead of the power demands of modern deepest, high-speed drilling. Better lubrication, engineered application and field appreciation of chain service give operation life under heightened loads far exceeding earlier performance records.

This is the fifth in a series of articles being presented by The Oil Weekly covering trends in design, construction, application and maintenance of important classifications of oil-field and pipe-line equipment.

Previous articles in the series described Spudders, Boilers, Drill-stem Units, and Crown and Traveling Blocks.



● **Baldwin-Duckworth Division of Chain Belt Company,** Springfield, Massachusetts, has added to its line of precision machine finished rotary chain an API-3 unit with ultimate strength of 75,000 pounds, which is designed to handle the load on the rotary drive for deepest drilling. The chain differs from the company's API-4 chain in that it does not have drop-forged side bars. It is made of selected alloy steel, with forged pins ground to size, and seamless rollers. The bushings are machined from solid bar stock, ground both internally and externally. The chain is so designed as to be easily detachable at any link.

● **The Chain Belt Company,** Milwaukee, Wisconsin, makes its 3⅛" pitch "Rex Universal," both single and multiple strand, for drilling to any depth. Alloy-steel bushings are heat treated and ground. Pins are of alloy steel, heat treated, with a three-diameter design which permits field disconnection when necessary. The pins are provided with machined locks to prevent turning in the sidebars. The sidebars are die cut, with bushing holes repierced and machine finished, and are heat treated. All precision-made parts are assembled in controlled presses to insure heavy force fits at every desired point. The chains are designed to be run in either direction.

each chain is considered as an individual problem in drive mechanics, and thus equipped without too much emphasis on replacement stocks.

Angle of Articulation

The angle of articulation is the angular amount of change in line between a tangential link at the instant of contact and the adjacent one on the sprocket. It is usually measured between the engaged link and the tangent to the sprocket, extended, and will vary with the diameter of the sprocket and the pitch of the chain.

Since the sprocket is not a true circle, as is a belt pulley, but instead is a regular, multilateral polygon with sides equal in number to the teeth on its periphery, the greater the number of teeth for a specified sprocket diameter, the nearer its approach to a true circle, and the smaller the angle of articulation swept through between the time any given link contacts the sprocket and is succeeded by the next.

As the sprocket turns with—or under—the chain, the contact between roller and tooth may remain unchanged once full engagement is completed, but the distance the tangential portion of the chain is from the axis of rotation varies by the amount of effective radius diminution resulting from the pitch diameter or length of the link between pins. Though this alteration of the point of support, on the last engaged pin, is comparatively slight, it is a phenomenon which occurs with great rapidity during the operation of a high-speed chain.

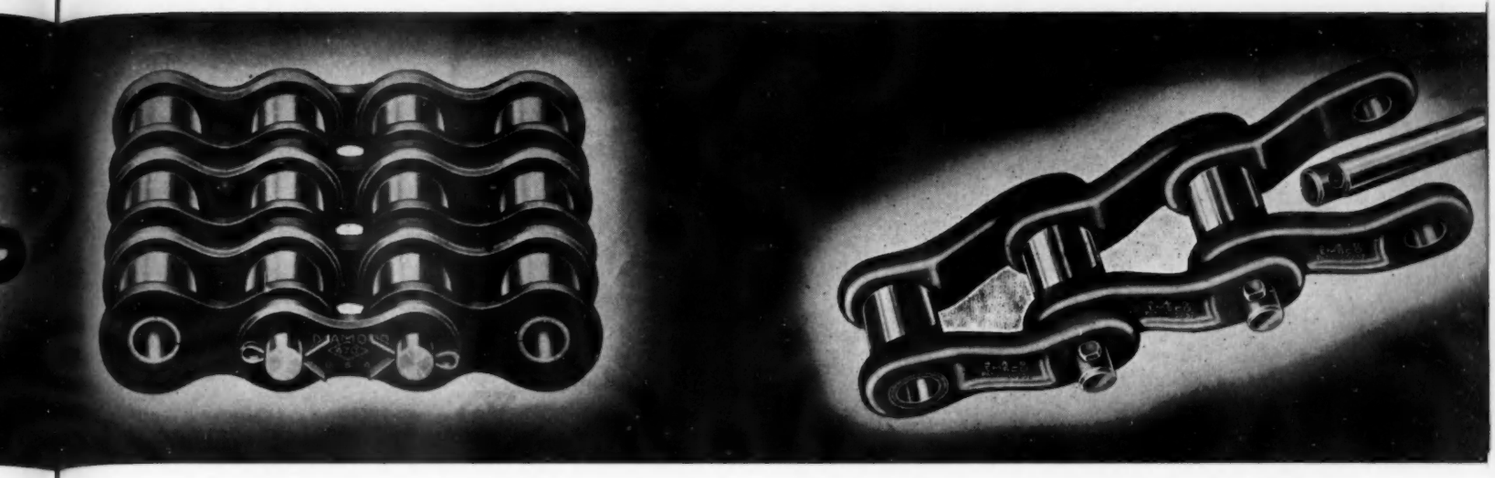
On a drilling-rig chain traveling at the rate of 1500 feet per minute, the travel per second is 25 feet, or, with a 4-inch chain, three times 25, or 75 links contact the sprocket during each second. As each of these pins sweeps through the arc from point of contact to its lowest point, and is replaced by the lift and subsequent drop of the succeeding pin, the chain is alternately lifted and lowered 75 times per second.

Since this contact of chain with sprocket is accompanied by a blow proportioned to the angle of articulation, it is apparent that this drilling chain is subjected to a pounding against the sprocket with a frequency of 4500 impacts per minute.

Unless the diametral distance between sprockets is exactly a multiple of operating pitch of the chain being run, a condition exists wherein one end of the tight chain is being lifted by one sprocket at the instant the other end falls, tending to set up within the chain waves which amplify or greatly augment the force with which successive rollers of the chain normally contact the sprocket.

This variation in impact or pound of the chain on the sprocket is frequently responsible for the apparent lack of uniformity in chain from the same manufacturer. One drive, on a certain rig, may stand up for as many as three deep wells while a similar chain on an adjoining rig requires replacement after making only half as much hole. Chain speeds may be identical, but due to design differences in the two drawworks, one chain functions over a 1:1 drive with ample sprocket diameters, while the other is on a 2:1 drive and must operate around a driven sprocket only half the diameter of that on the drive giving longer life.

On rigs of modern design with well-engineered drives and automatic lubrication, it is not unusual to drill as much as 100,000 or even 200,000 feet of hole without chain repair and before replacement of chains may be deemed desirable. Even drives to rotary tables, rarely



● **The Diamond Chain and Manufacturing Company,** Indianapolis, Indiana, features its Model T-470 (American Standard E-100), triple strand 1¼-inch pitch chain, using alloy steels, correctly heat-treated, to withstand shock loading as imposed through jaw clutches. The chain is designed for rotative speeds to 1000 rpm and linear speeds to 5000 fpm. The press-fit centerplate construction is used in this multiple chain, which is designed to operate, with lubricant of S.A.E. 10 or 20 grade, at high or low speed. The chain, like its other single and multiple chains, is designed to be used on cut-tooth sprockets corresponding to chain standard specifications.

● **Emsco Derrick & Equipment Company,** Los Angeles, California, makes its 4D API precision alloy steel chain to meet deepest drilling demands. The side bars are drop-forged alloy steel, with holes bored with borematic machines after heat treatment. Rollers are alloy steel, annealed and cold drawn, ground O.D., borematic I.D., then hardened and tempered. Bushings, of alloy steel, are carburized and then ground I.D. and O.D. The pins are of alloy steel, annealed and cold drawn, hardened, tempered and ground. The chain is designed for 170,000 pounds tensile, and weighs 17.0 pounds per foot.

enclosed, benefit greatly from drip or manual lubrication, especially if the chains be cleaned occasionally to open up clearances.

Engineering Handbook[1] figures recommend that when the chain velocity exceeds 800 feet per minute the working load should be decreased by the centrifugal tension, whereas recent investigations by chain manufacturers[2] offer proof that the centrifugal force developed by that portion of a chain traveling around a sprocket, whatever the speed, is not transmitted to the straight portion of the chain—such a transfer being impossible due to the interposition of sprocket teeth and the centrifugal force being resisted or transmitted to the teeth of the sprocket with which the chain is in contact.

Perhaps the limits of chain drive speeds assuming sufficient strength in the sprockets to resist the centrifugal forces set up, lie in the ability to design lubrication systems which will retain sufficient oil during the sprocket transition periods to insure against excessive wear before again reaching the source of oil supply.

[1] Kent, Vol. III, page 24-42.
[2] Product Engineering, Jan. 1940, pages 2 et seq.

Formulae purposing to set safe limits beyond which chain operation should not pass fail to cover latest chain design and materials. The limit of allowable revolutions per minute for the API-4 chain, expressed by the formula

$$\text{rpm} = \frac{1920}{P} \times \sqrt{\frac{A_r}{W_r P}}$$

Where P equals pitch equals 4.063
A_r equals projected area of roller equals 1¾x1 27/32
W_r equals weight of chain per foot equals 15.7

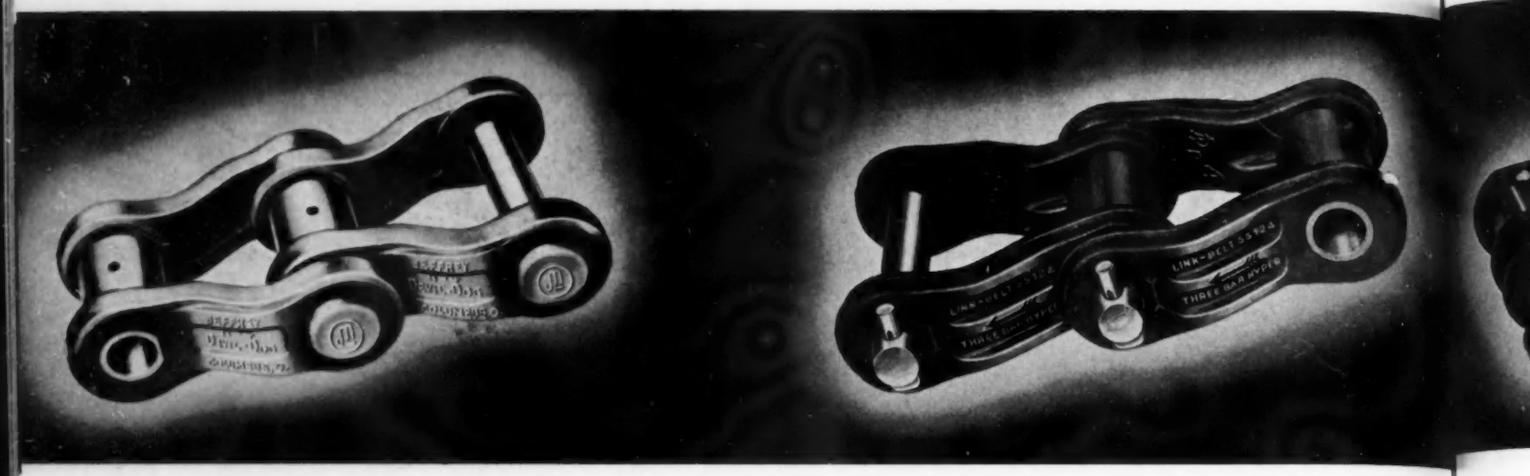
gives a maximum rpm of the sprocket of 106, whereas modern line speeds show this figure to be exceeded by more than 50 percent in several types of drawworks, quite without evidence of undue stressing or wear at any point in the chain.

Lubrication

Highly finished chains, manufactured to tolerances comparable to those of airplane or automotive work, are precision mechanisms of many closely matched working parts. A 120-link drawworks drive, for instance, is composed of 360 bearing surfaces in active operation, in none of which may complete rotation be relied upon to insure lubricant distribution. In addition to the large number of interrelated bearing surfaces functioning under conditions of ideal operation, any irregularity in drive may establish rubbing contact at as high as 480 additional paired surfaces.

In addition to the straight-line motion of the chain between sprockets, there is the considerable centrifugal force encountered as the chain goes through an arc of around 180 degrees in its passage over the sprocket, both tending to throw off lubricant and starve contacting surfaces during the period of articulation.

Modern high-speed, heavy-duty drilling chain is nearly all designed and built for lubrication with S.A.E. 10 to 20 oils when run in enclosed cases with force feed spray or flow over the strands, and for oil of S.A.E. 30 to 40 characteristics when relying upon drip tanks, drainage baffles and other devices for collecting oil spray and directing the flow toward or upon the chain. Oil holes, spiral grooves, other oil leads and capillarity combine with inertia of the lubricant to conduct or force it into the open side of the bearing clearances, and thus permit its circulation to work-



● **The Jeffrey Manufacturing Company,** Columbus, Ohio, manufactures its "Devil Dog" API-4 chain for 170,000 pounds ultimate and with a weight of 16.3 pounds per foot. Ribbed side bars are drop-forged alloy steel, heat treated. The casehardened alloy steel bushings are ground inside and out, with flats at each end for secure locking in side bars. The bushing is machined from solid bar alloy steel, heat treated. The pin is centerless ground and cadmium plated on alloy steel after heat treatment. Reduced diameter on pin shank and double lock under head facilitates assembly. A solid, grooved pin cotter is used.

● **Link-Belt Company,** Indianapolis, Indiana, features its SS-124, three-bar API-4 Hyper chain for deep drilling. Side bars are offset type, drop forged, and finished to precision limits. Bushings are machined from alloy steel, casehardened and ground internally and externally, then fitted rigidly in side bars. The rollers are of heat treated alloy steel, made to close tolerances. The cadmium-plated pins are of forged alloy steel, machined, heat treated and ground, with T-shaped heads abutting pin lock on side bar to prevent turning or rocking. The end is chamfered to facilitate assembly. Grooved shank, cadmium plated cotters with solid T-head are used.

ing faces through oscillation, reversal of stress and shift of pressure areas.

To afford this precision-formed chain the lubricant which it requires is not within the scope of the chain manufacturer, his product being dependent for necessary lubrication upon facilities provided by the maker of the unit on which the chain is to run, and the continued supervision of the men responsible for its field operation.

Direction of Rotation

Manufacturers of chain in which the offset type of side plates are used, differ as to the proper direction of rotation. That is, whether the chain should be run open end or closed end forward. Where the direction of rotation or travel is relied upon to present lubricant channels most advantageously as oil scoops to pick up or aid in forcing oil to the bearing surfaces, such direction of rotation becomes of greater importance than the distribution of wear on pin or bushing while passing through the angle of articulation, and especial attention should be directed toward seeing that the chain is run in the proper direction.

That this matter of proper rotation is perhaps not as important as manufacturers would indicate appears from inspection of chain drives on upwards of 100 rotary rigs drilling below 7000 feet. In one instance, out of all the chains on the rig, only one was so placed as to present the oil leads properly during transmission of its load. The others, almost without exception, were so located as not only to be running the wrong way of the link, but the pin locks were carried on the side having minimum clearance, so that the slightest side motion of the chain across the tooth, or lateral sway between sprockets, might result in pounding and abrasion of the locked end of the pin. Yet this rig, in common with others inspected, reported a minimum of chain trouble, and inspection of two chains, normally operating the "wrong way," indicated that ample lubricant was finding its way between roller and side plates and through the clearance between links, and that wear was being held to a minimum.

Unless, or until, chain and sprockets are designed and built to permit operation only under one set of conditions and in but one direction, chain manufacturers desiring one-way rotation of their output may expect to find at least half of their chain being run in the direction opposite to that recommended in their literature, and may design and build accordingly.

Regardless of the direction in which a chain has been run on a certain set of sprockets, every care should be exercised to insure that the chain runs again in the same direction if replaced on those sprockets.

Likewise, if multiple width chains are employed, certain provisions must be observed to insure smoothness of operation and long life of both chains and sprockets. The chains, if removed, must be replaced on the same sprockets and must run in the same direction as before removal, to avoid possible overloading or severe wear. On plural drives, where two or more chains are used between as many sets of sprockets to form a complete drive, it is essential that the sprockets all be set with their teeth aligned. Only through observance of this factor can the point of impact be uniform for all chains in the drive, and the distribution of shock assured throughout the system.

● **The National Supply Company,** Toledo, Ohio, designs its Ideal No. 3⅛ single and double rotary chains for heavy-duty, high-speed operation on machine-cut-tooth sprockets. The No. 3⅛ single chain has an ultimate strength of 115,000 pounds and is used for rotary tables, catshafts and other like requirements. The 3⅛ double has an ultimate of 230,000 pounds and is used for engine and heavy drawworks drives. This chain, through finer pitch and reduced width, makes available greatly increased strength with no sacrifice of flexibility. Lubrication is through drip feed, or by enclosed oiling system. The chains are made to API specifications, and are precision machined and heat treated.

● **The Union Chain & Manufacturing Company,** Sandusky, Ohio, features the new Union lock collars on all sizes of API oil field chain. The lock collar which is used with all pins except the connecting unit consists of two half washers which are inserted into a groove in the end of the chain pin and then welded together and to side bar. The connecting pin collar is a spring washer sprung into the groove after the chain is assembled in the field. All grooves are standard so a spring washer can be used on any pin for field connection. Any chain pin can be removed from the chain without impairing it for further use. By use of the lock collars as much as ⅜ inch is removed from the length of the pins, permitting closer clearances within the rig frame.

When replacing one chain on a plural drive, it is advisable to replace all; since the renewal of but one chain, with all new bearings and minimum tolerances, will mean that the new unit has the standard pitch, while the others, having been run for some time, have slight wear at each bearing, with consequent cumulation of elongation sufficient to permit the old chain to "loaf," and to throw most of the load of the drive on the new unit.

Worn sprockets, especially if used enough to begin to show the characteristic "hook" or recess at the working base of the tooth, should be replaced at the same time the chain is renewed, as otherwise the misshaped sprockets will tend to impose the entire load on what is equivalent to a line bearing on the roller, and to concentrate the impact on a very small portion of the surface designed to receive and distribute it.

Methods of Handling

Packing and transportation of drilling chain from factory to supply warehouse, and from warehouse or company stores to the rig now recognize drilling chain as a machine or mechanism of precision manufacture and thus deserving careful, intelligent handling.

In this matter of bringing chain to the job in first-class shape, unaffected by grit, rust and other destroying substances, the manufacturers have pioneered in wrapping and packing chain so as to preserve not only the lubricant but also the appearance and initial cleanliness of the unit. The standard 10-foot lengths are wrapped in heavy, waxed paper, boxed, and so thoroughly protected as to withstand long trips by water or truck without suffering damage.

The chain still must be protected against the human element, and it is through this factor that a new section, even before being placed on the sprockets, may be damaged seriously. Cases containing a 10-foot length of 4-inch chain, with a weight of from 16 to 20 pounds per foot, have an overall weight of nearly 200 pounds, and are a load for one man to carry to the derrick floor. Yet it is not unusual to see such a box, filled with a precision unit made up of some 180 parts machined and ground to tolerances of tens of thousandths of an inch, dropped from the derrick floor to a projecting sill — as the easiest method of breaking open the sturdy box in which the chain has been protected during shipment and storage.

Use of a cylindrical box, in which the chain fits snugly within the encircling plywood rim, tends to prevent localized chafing of the chain against its paper wrapping, and thus still further to insure its arriving on the job amply lubricated and uncontaminated by dust or grit.

Where this plywood cover is reinforced by steel strapping, the case frequently is rolled instead of being carried, and thus accidental smashing avoided. Only close supervision by those responsible, however, can protect chain against possible damage through opening the package the "easiest way."

The goal of lessened chain cost per foot of hole—or per ton mile—has been achieved through increasing the capacity of the chain which has in turn increased the life expectancy of the unit. Factors which have contributed largely to this are precision manufacture; exact pitch, resulting from accurate methods of manufacture; and application of cut-tooth sprockets, which enable the precision-made chain to match with smooth and uniform tooth surfaces and thus eliminate the

● **The Morse Chain Company,** Ithaca, New York, features a Standard roller chain for oil well drilling service which incorporates a bushing construction providing oil passages from the accessible roller area to internal pin bearing surfaces. The shallow grooves formed in the exterior surface of the bushing act as oil channels to transfer lubricant through the roller link plates to the pins, with capillary attraction serving to distribute oil further to the pin-bushing areas. Thick-walled bushings permit heavier press fits in precision broached apertures in side plates. Alloy steel is used throughout with proper heat treatment and hardening operations. Rollers are deep drawn or turned from solid bar stock.

● **The Whitney Chain & Manufacturing Company,** Hartford, Connecticut, manufactures its standard and heavy series chains for oil-field service to the American Standard dimensions with the exception of its 2½-inch pitch chain which carries oversize pins. Rollers are alloy steel cut from solid bar stock and heat-treated, as are the alloy-steel side plates, in which the holes are reamed before assembly. The bushings are die drawn for bore smoothness and casehardened. The alloy steel pins are centerless ground and casehardened. A special alloy steel hooked locking pin is used to retain the outside plates. Multiple width chains are designed up to 232,000 pounds ultimate strength in quadruple width, 2-inch pitch.

extra loads imposed by casting inaccuracies. Further gain in chain life is attained through elimination or suppression of vibration in the smoother operation attained by running over cut instead of cast sprockets.

Oil-bath lubrication in oil-tight cases, either with or without pump pressure to insure flow of oil over the entire chain, provides marked reduction in chain wear and results in decreased friction between sprocket and chain and thus maintains for a longer period the accurate pitch and correct meshing or engaging of chain and tooth faces. Proper lubrication also aids in maintaining the correct tension and desired amount of slack in the drive.

Further Improvements

Much research has been carried out by chain manufacturers to determine scientific weight distribution in the side bars, to obtain the required thickness and bearing area at the points where pin or bushing are assembled, and still further weight reductions per unit may be expected as further investigations develop specialized sections which maintain the desired tensile and torsional strength with reduction in area. Development along this line, involving alloy steels, may be expected to continue as soon as national defense restrictions on industrial uses of such alloys are lifted.

Wider application of multiple chains, in which design and basic material changes will enable the manufacturer to eliminate the present difficulties encountered with field handling of the relatively long and slender pins encountered in this type of chain, will permit return to shorter pitch chains, providing more sprocket teeth for a given diameter and lessening the unit angle of articulation and the difficulties inherent thereto. Lightening of the unit weight of multiple chain, together with distribution of the impact effect over a number of sprocket teeth instead of a single unit, will permit the design and use of shorter drive centers.

Universal adoption of pitch-multiple centers for highest speed drawworks shafts on the part of manufacturers of those units, together with understanding by the drilling industry that specific types of chain are basic factors in the drilling equipment design, will permit further refinement of sprocket and chain design so as to provide positive lubrication, uniform tension and desired slack.

The refinements of design, material and manufacture which have characterized the production of drilling chain during the past few years, may be expected to continue at the same rate, with decided acceleration when it is no longer felt necessary to design new chain types with an eye to the replacement volume anticipated on outstanding equipment.

In the selection of chain types and sizes used to illustrate the product of various chain manufacturers aiding in preparing this article, it was necessary to limit each firm to but one illustration, although in most cases the manufacturer makes both ASA and API chain for drilling use. The showing of one type does not indicate that the manufacturer does not also make and recommend theother chain as well.

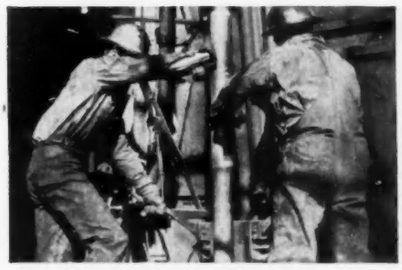
"ALL OIL WELL CHAINS ARE ALIKE," HE SAID

THE REX MAN

...AND LEFT HIMSELF "WIDE OPEN" FOR THIS...

① **"YES, THEY'RE ALL PRETTY MUCH** alike," I agreed, "but you'll never find a Rex user who isn't convinced that there's a big difference. Why? Because none of them have all the patented 'long life' Rex oil well chain features.

② **"TAKE THIS REX CHAMPION No. 4!** Use it on your deepest and fastest rigs—there's where you'll see the real difference between Rex and 'just as good' chains—a difference that means more feet of hole per foot of chain!



③ **"HERE'S WHERE THE VALUE** of the Rex Unit Link and Rex *all alloy steel construction* shows up! Rex chains are heat treated, precision finished. They flex easily from the start! Naturally, they wear more evenly and last longer.

④ **"AND REMEMBER THIS,** Rex provides better-than-ordinary lubrication. There are two sets of oil holes in the bushing that are always ready to receive oil and send it to the pin. And with the chain running in *either* direction!

⑤ **"GET THE WHOLE STORY** about the Rex riveted pin joint that has *all* the advantages of a cottered chain and *none* of its disadvantages! Also, check Catalog 444—see why Rex Champion is the best chain for your toughest work!"

⑥ **"SOUNDS INTERESTING,"** he said. "And when I told him how easy it was to get Rex oil well chains at his nearest supply store, he 'got on the phone,' made arrangements for delivery before I left. He'll be another satisfied Rex user, soon!"

P.S. *Investigate the greatest chains that ever hit the oil fields: Champion, Universal, Deep Well, Standard and Rex Roller mentioned in this imaginary conversation. There's a Rex chain for every speed, depth of hole, and type of drilling. Also ask for the latest news on the Rex Mud Conditioner. See your supply dealer or write our home office. Address, 1639 W. Bruce St., Milwaukee, Wis.*

REX OIL WELL CHAINS

CHAIN BELT COMPANY OF MILWAUKEE

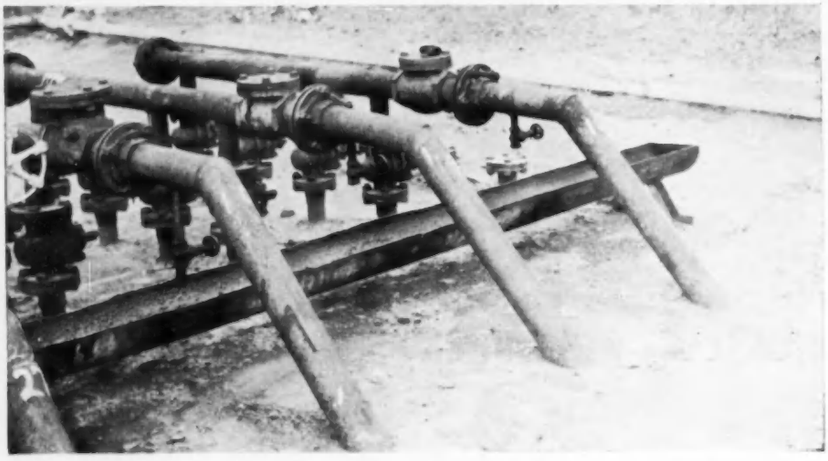
Baldwin-Duckworth Chain Belt Division, Springfield, Massachusetts • Worcester, Massachusetts
Rex Chain Belt and Conveyor Divisions, Milwaukee, Wisconsin

50th ANNIVERSARY 1891 REX 1941 CHAIN BELT COMPANY

Practical Operating Hints for

1. GOOD HOUSEKEEPING

Trough Below Bleeder Valves of Multiple-Well Manifold Conducts Drippings to Nearby Sump



The pan below these bleeder valves conducts drippings away, reducing fire hazards.

REDUCED fire hazards, with accompanying safety to men in the field and lowered production costs, are reflected almost immediately in proper maintenance of oil line fittings and the surface of the ground immediately surrounding multiple-well manifolds, trap settings and tank batteries.

The field department of one company has made such maintenance work a much simpler problem by placing drip pans, made of opened sections of casing below bleeder valves, sample cocks and drain plugs. A typical installation is made by cutting a length of 8⅝-inch casing length-wise and welding it to simple legs. A gentle slope of the pipe conducts drippings to a nearby sump through a drain in the lower end.

Should leaks start in the line, couplings or valves, their presence can be detected at once and proper repairs made before serious damage results.

This sign is supported by a framework permitting its easy removal for repair.

2. IDENTIFICATION

Standards Permit Removal of Signs

THE Bridwell Oil Company equips wells with identification signs supported by framework that permits easy removal for repair. Constructed of short lengths of the type pipe, the frames are made at little expense, but form a neat and uniform method of well identification.

A wide U is made of 1¼-inch pipe, welded at all connections; and in the inside perimeter is cut a slot of sufficient width to allow the wooden sign to slip into the pocket formed. This supporting framework is centered and welded on the top of a 4-foot upright of 2-inch pipe, sealing the top of the two-inch to prevent accumulation of water in the pipe.

With enough of the upright driven into the ground for a firm base, the structure forms a substantial holder for the well identification sign. All signs, painted white with neat black lettering, giving the name of the operator, the lease and the number of the well, are frequently cleaned or repainted to enhance their appearance, and are easily removed from the framework for that purpose.

3. WELL SERVICING

Power Controlled by Extension Throttle

CONTROL of the power plant on the servicing rig requires close supervision and accurate regulation if the work is to be completed without lost time. To make this easier for the machine operator, one producer rigs up an extension throttle so the operator may stand at ground level and control engine speeds.

The usual throttle, located at the back of the truck with other controls, is equipped with a quadrant permitting a heavy cord or short length of flexible wire line to be attached and led to a foot pedal at a point where the operator can best observe progress of the work. The pedal or extension throttle controls fuel feed to the

THE practical operating hints for the drilling rig and production man, appearing in these features each week, are secured from oil fields everywhere and offer suggestions that will help to improve field efficiency and safety. The items give an excellent picture of the remarkable ingenuity being exercised by the operating divisions of the industry. Contributions to these features will be paid for at the rate of $5 for each illustrated item accepted. Address contributions to "The Editor, THE OIL WEEKLY, Houston."

THE PRODUCTION MAN . . .

Operator on this platform controls extension throttle of service rig power plant.

internal combustion engine as does a similar truck pedal, the installation of a spring of adequate tension insuring return of the pedal and extension quadrant to the off position as soon as pressure on the pedal is released.

Foot control of engine speed is much less wearying than hand operation, and leaves the operator more free to move around slightly, to shade his eyes as he watches the elevator, and to obtain quicker cutoff than could be obtained by hand on the usual rotating control.

4. WELL SERVICING

Adjustable Legs for Well-Pulling Unit

INSTEAD of resorting to use of separate jacks and miscellaneous blocking to support the rear end of a truck-mounted portable well-pulling unit, one company uses an inexpensive system that materially cuts down the set-up time at each pulling job.

Two 30-inch lengths of 5½-inch heavy pipe are inserted vertically in holes cut in each side of the truck bed, and then welded to the side of each of the truck frame members that support the unit floor. A ⅞-inch hole was drilled through the approximate center of the short length of pipe projecting above the floor. A 5-foot length of 4¾-inch pipe then was run through each of these short nipples, and at the lower end of each, an 18-inch square ¾-inch flat steel plate was welded to form a broad supporting base. Holes of ⅞-inch diameter at 4-inch intervals were drilled along several feet of the upper portion of this pipe. An ell-handled ¾-inch steel rod then was used to run through the holes in the fixed section to engage the appropriate holes in the inner section when the two bases were firmly planted on the ground.

These adjustable legs are quickly lowered and placed on muddy or irregular terrain without having to dig out or level off a level location for blocks, as was formerly necessary. On moving, the adjustable legs are pulled up to where the bases nearly contact the lower end of the welded sleeves, after which the pins are inserted through holes in the inner pipe.

5. PIPING

Winch Power Used for Threading Operations

CUTTING threads on field connections is a chore which eats heavily into the time of the maintenance gang, and which all too frequently results in imperfectly cut threads, with eventual leakage or extra maintenance being required to overcome the damage.

One company cuts all field threads, even short tie-in nipples, by employing the power take-off on the service truck winch, having provided a pipe extension which slips over the take-off shaft and which is fitted to drive the square on the gearing of the pipe die.

By supporting the pipe to be threaded on a combination vise and tripod at the proper height to assure practically a straight-line drive from winch shaft to die square, uniform power application is provided the dies, with consequent smoother cutting and without the stops and back-ups which so often result in die breakage or thread galling.

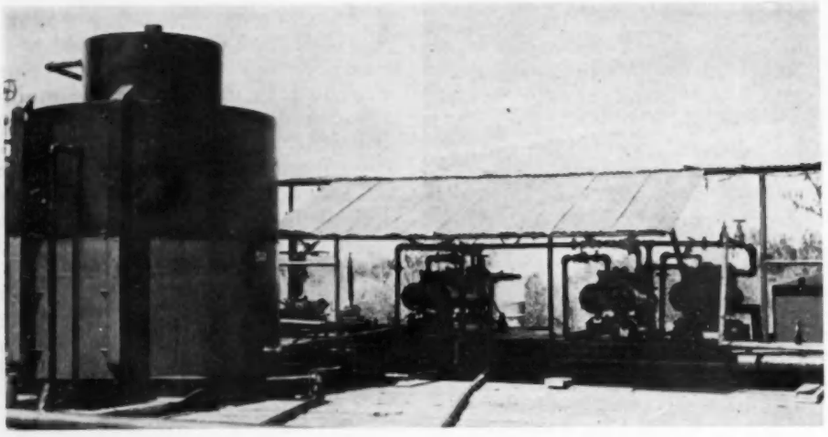
To support long lengths of pipe for threading, the unit also includes a tail-stock or back rest, consisting of a vertical pipe riser mounted on a crow's-foot base, and with a saddle at the top which carries the pipe at the correct height to align with the vise on its tripod.

Power take-off from this service truck winch is used to cut all field threads.

Practical Operating Hints for

1. EQUIPMENT CARE

Sheet-Steel Roof Over Boiler-Feed Pump Set-Up Affords Protected Working Space



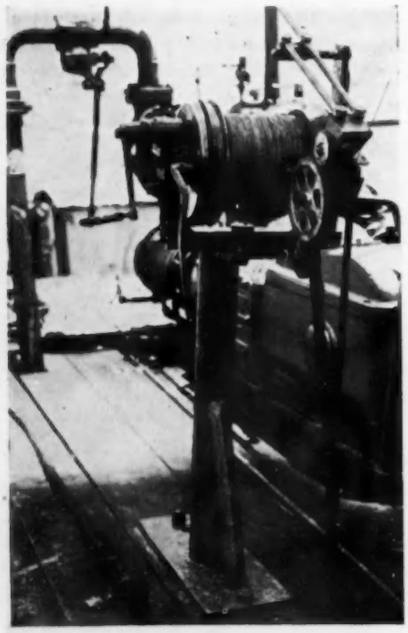
Easily attached sheet-steel roof gives protected working space around mud pumps.

AFFORDING a protected working space around three pumps used in the boiler-feed set-up on a Gulf Coast drilling rig, a light sheet metal shelter is pivoted to the pipe support for the main roof, supported on standards set in sockets carried in the skid base.

The shelter may be folded back or removed if a pump must be lifted from the skid or placed there, and is normally carried atop the fixed roof on moves.

The three pumps protected by the shelter are each 10x4½x10, and manifolded so that any one may take the normal duty of any other. Under ordinary conditions, one pump takes cold water from the fresh water storage pit and pumps to the treater and feed-water heater, the second takes from the heater and pumps to boiler-feed manifold, while the third handles cold water from the pit to the derrick floor and to the make-up on the mud ditch.

For filling boilers or other work where greater volumes of water are required quickly, two or all three pumps may be manifolded to provide the required flow and minimize filling time.—*W. M. Kelly, Bay City, Texas.*



This base and support for wire-line reel is made of pipe and sheet steel.

2. GADGETS

Sturdy Support for Wire-Line Reel

A STURDY base and support for a wire-line reel may be made be made of drill pipe and ¼-inch steel plates. A piece of 4½-inch pipe three feet long is welded on a 6 x 18-inch plate, reinforced by a short piece of 2-inch pipe welded at an angle from the plate to the upright. Holes cut through the base enable it to be bolted to the derrick floor.

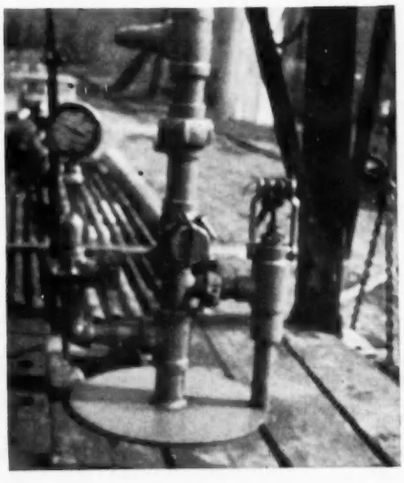
A similar plate is welded to the top of the drill pipe, with holes cut for bolting to the wire-line reel. The device is fastened firmly on the floor at a convenient place behind the cat head, and permits faster time in running measuring lines or surveying instruments. The reel support is neatly painted, adding to the appearance of the rig. Simply by withdrawing a few bolts, the reel or the entire support is easily removed.

3. RIGGING UP

Steel Disc Distributes Stand Pipe Weight

DISTRIBUTION of stand-pipe weight and pressure reaction over a considerable area of the derrick floor may be accomplished by a circular base welded to the riser at floor level.

The base is constructed from ½-inch steel plate, 42 inches in diameter, with a hole cut through the center to fit snugly around the stand-pipe nipple. The nipple is welded to the plate on both sides, fixing it firmly and presenting the resistance of two welding beads to possible vibration stresses. The 3-inch by 2-foot heavy-duty nipple carries a union on the lower end, below the derrick floor, for



This circular base distributes weight of the stand pipe over a wide area.

quick and easy attachment of the mud line from the pumps.

The upper end of the nipple carries a tee for the mud pressure gauge and a short 2-inch nipple welded into the stand-pipe main just above the tee for attaching the mud-release valve. To prevent possible overloading of the mud pumps because of the stand-pipe being closed off, the plug valve controlling this is set adjacent to the release lever, permitting the relative positions of the two valves to be checked from one position.

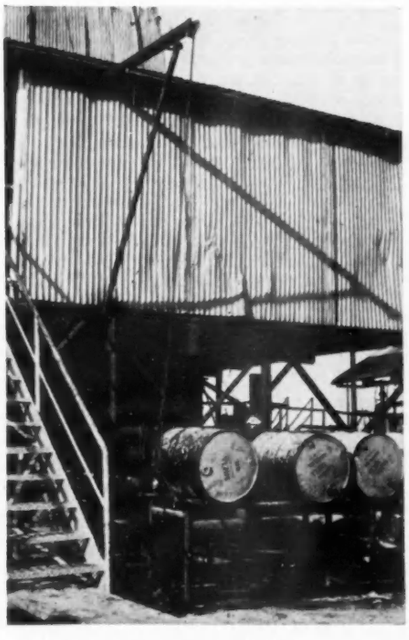
Only the pressure gauge is removed when shifting to a new location, the other connections being made up and left unmolested until renewal is indicated. The heavy steel footing serves to protect the fittings when on the move, and prevents crushing through other loads placed too close to them while on the truck.—*E. C. Overturf, New Harmony, Ind.*

4. MATERIALS HANDLING

Hoist Aids in Lifting Oil Drums to Rack

TO facilitate setting oil drums on the rack, one company uses a boom extending from the engine room at the well, placed at a point so that the cathead at the drawworks can be used to supply power. The boom is made of 3-inch pipe, fitted with a small pulley at the outer end for a small wire line to run down to a set of grapples which hook onto the chime of the drum.

The line inside the building is attached to a manila cable so it can easily be used on the cathead when placing a drum of oil on the rack. The boom is easily disconnected and broken down into two sections of pipe when changing locations.



Full oil drums are easily lifted to the rack by employing this handy boom.

This sled protects threads on kelly and drill collars when coming out of hole.

5. EQUIPMENT CARE

Sled Protects Drill Collar Threads

PROPER care and protection of the threads on the kelly, drill collars, and special tools is amply repaid in the safer and longer useful life of those tools.

By employing a small double-runner sled in which can be rested the thread ends of such joints, one operator minimizes the chances of injury to threads while laying the joints down along the pipe-rack walk. A 2-foot length of 8⅝-inch casing, closed at one end, is cut open to form a cradle into which the thread end of the joint can be inserted. This short section then is welded between two 30-inch skid-end lengths of 3-inch pipe. A small loop welded into the closed end of the cut-away casing allows the man on the floor to use a hooked rod or rope to pull and guide the sled along as the joint is lowered.

6. ROPE CARE

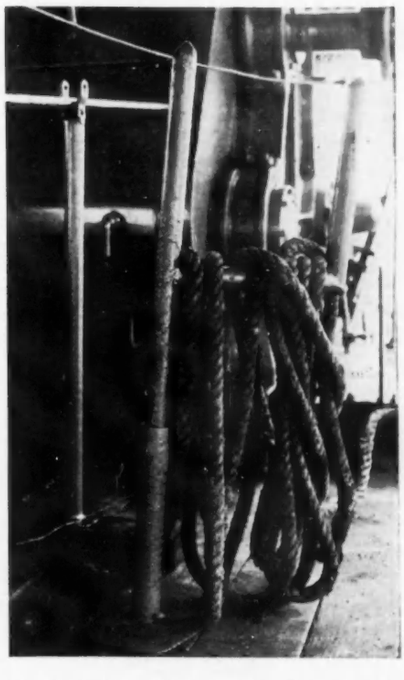
Convenient Rack for Unused Cat Line

ONE operator constructs a rack to hang the free end of the cat line on while not in use, enhancing safety and appearance of the rig by encouraging the crew to keep the idle line off the floor.

The rack is made of 2½-inch tubing about 18 inches long, welded on a steel plate base of sufficient size to assure steadiness. A 5-foot arm of 2-inch pipe is set in the open end at the top of the upright, its smaller diameter allowing free rotation in the socket. A short horizontal and upright pipe is welded near the top of the upright to form a U-shaped holder with upper ends sealed to prevent accumulation of water.

The device is bolted or nailed to the floor a few feet behind the cathead, and when not being used, its swivel connection permits turning out of the way of the crew during drilling operations.

It may be broken down into two conveniently handled pieces when changing locations.



Cat line draped on rack when not in use is safely out of the workers' way.

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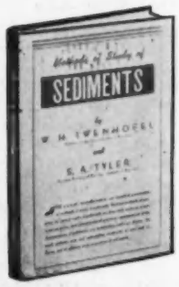

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SHAKE-OUTS

From The News

Building of oil tankers will be facilitated by OPM'S giving of the highest priority rating (A-1-A) to ship building companies on their orders for materials—the same rating as that for aircraft and tanks. Heretofore, shipbuilding orders rated only A-1-C. Equipment affected includes turbines, boilers, steel, and electrical equipment. Materials used in shipbuilding facilities, mainly structural steel and cranes, continue to be rated A-1-B.

Further speeding up of construction of merchant ships is anticipated as soon as additional labor has been trained, after which shipbuilders may work three shifts, instead of the two now used.

★

Speeding against the tanker shortage, Sun Shipbuilding & Dry Dock Company has about halved the time required ordinarily to build The Atlantic Refining Company's S. S. *W. C. Yeager*, to be launched July 7, three months and three weeks after keel was laid; usual time six months. Fitting will be completed by August when the ship will ply between Texas and Philadelphia, moving 154,761 barrels a trip.

★

Speaking before the oil conference in Washington June 19, Erle P. Halliburton styled himself as an independent oil producer from Oklahoma that sold everything from women's hose to ponderous trucks (also, he is head of Halliburton Oil Well Cementing Company) and that he had found: *"prices for my products and services are controlled by my competitors and likewise wages that I pay my employes are based on the wage that these competitors will pay. If my prices are too high, competition quickly takes advantage of the situation and if my wages are too low these competitors will grab my men."*

★

Zinc will be placed July 1 among the strategic metals under full priorities. The emergency pool for urgent defense needs is retained, as in the case of copper, and all other defense requirements will be filled ahead of civilian orders, with the latter to be allocated by OPACS.

★

As compared with the 7-year low of approximately 8½ cents a gallon as of December 1, last year, the average U. S. dealer price of gasoline now is practically up to 10 cents, or to the highest level since the middle of 1938. This is indicated by the fact that additional improvement has occurred since June 1, for which time the API reported an average of 9.85 cents.

The Bureau of Mines reports: *"Motorists throughout the country are getting the finest grades of gasoline in the history of the gasoline age."* Average octane ratings have increased appreciably and anti-knock and volatility qualities of all three grades of gasoline have shown a steady improvement for the past five years, the report reveals. Examinations included 2020 samples from 120 companies in the eleventh semi-annual survey.

★

Prospect of growing demand for Diesel oil was emphasized in a recent week when orders were placed for 450 Diesel-electric passenger locomotives and switching engines by four railroads and the United States Army and Navy. Canadian railways placed 20 of those orders with two American manufacturers, and Louisville and Nashville Railroad accounted for 12, while Atlantic Coast Line ordered 9. Switchers continue a large portion of Diesel-electric locomotives sold, but substantial numbers of Diesel passenger engines steadily go into service, and the Diesels are being tried out in freight service, particularly for speeding perishables.

★

Petroleum freight-rate reductions inaugurated recently from Group 3 to the Middlewest are to be extended to apply from terminals in the latter territory to Minnesota, Dakotas, Montana and Wyoming. Reductions range to 4½ cents per hundred pounds.

★

Oil workers in 1940 sustained only a little more than half as many fatal injuries while on duty as they did when not working, a review of fatalities by the American Petroleum Institute's Department of Accident Prevention reveals. Companies employing 327,112 workers reported 101 fatalities last year or a rate of 30.9 per 100,000 workers, the lowest since data have been reported and 49 percent below the fatality rate in 1930. Off-duty fatalities of these workers were almost twice as high as the industrial fatalities.

★

The electric motor was invented 100 years ago by Charles Wheatstone. The first totally enclosed motor, widely used in the oil industry was dated 1905.

★

Florida has passed a measure offering $50,000 cash and 40,000 acres in leases to the party bringing in the first commercial oil and gas well in the state. The act expires in five years.

HIGHLIGHTS IN THE WEEK'S NEWS

Allowables

Tanker Diversion Restricts Bureau July Demand Forecast

Forecasting that July Demand for oil products would require a daily average supply of 3,847,100 barrels of crude petroleum, the United States Bureau of Mines last week disclosed that the increase over the June estimate—17,100 barrels a day—would have been much higher had it been possible to evaluate the effects of the diversion of tankers from the Gulf-Atlantic service.

"The effects of readjustments in transportation and consumption resulting from the withdrawal of tankers from the Gulf to East Coast movement are still too indefinite to be accurately measured," the Bureau said in its monthly forecast. "The bureau's forecast for July reflects the trends of the latest data and indicates at least temporary curtailment of Gulf Coast markets, and an increase in the relative production of the refinery districts further to the north and east. Increases in the estimated demand for Oklahoma and Illinois crudes are based on probable withdrawals from storage.

"The ultimate change in the market demand for crude from the states supplying the Gulf and East Coast areas will depend on the speed with which transportation readjustments become effective and also upon the extent to which the diverted tankers may move products directly from the Gulf Coast for British use or for our own increasing naval requirements.

"The net effect of the transportation situation on the bureau's forecast of demand for July has been to reduce an anticipated substantial increase in the estimated total demand for crude and refined products and to cause greater readjustments among the sources of supply than were indicated by previous trends."

The anticipated July demand, 6 percent above actual demand for the same month last year, is based on a daily average production during the five weeks May 10 to June 7 of 3,790 000 barrels, and runs to stills of 3,813,000 barrels which, with a decline of 123,000 barrels a day in stocks, indicated a demand of 3,913,000 barrels.

The domestic demand for gasoline in July is placed at 60,300,000 barrels, an increase of 12 percent over the actual demand a year ago, when requirements were abnormally low due to advance buying in anticipation of the increase in the federal gasoline tax. Exports, based upon forecasts by the principal shippers, are placed at 2,000,000 barrels, exclusive of re-exports of motor fuel imported in bond.

With stocks of finished and unfinished gasoline on April 30 of 95,931,000 barrels, statistics of the American Petroleum Institute indicating that inventories declined about 2,600,000 barrels during May to 93,300,000 barrels at the close of that month—7,600,000 barrels less than on the same date in 1940—the bureau estimates a further decrease of 3,800,000 barrels during July.

Benzol production and direct sales of natural gasoline were estimated at 1,800,000 barrels, making an indicated refinery production of 56,700,000 barrels, to be allocated among the several districts as follows:

East Coast, 7,050,000 barrels; Appalachian, 2,200,000 barrels; Indiana-Illinois, 12,550,000 barrels; Oklahoma, 2,890,000 barrels; Kansas-Missouri, 3,250,000 barrels; Inland Texas, 3,580,000 barrels; Texas Gulf Coast, 13,800,000 barrels; Louisiana Gulf Coast, 1,640,000 barrels; inland Louisiana - Arkansas, 1,060,000 barrels; Rocky Mountain, 1,540,000 barrels; California, 7,140,000 barrels.

[*Continued on page 48*]

Bureau of Mines Forecast of Crude Oil Demand for July

State	Forecast July, 1941	Forecast June, 1941
TEXAS	1,324,000	1,371,700
California	624,800	615,300
Oklahoma	498,500	459,700
Illinois	384,800	345,300
Louisiana	304,000	319,700
Kansas	225,300	220,400
New Mexico	108,600	113,000
Wyoming	88,400	89,300
Arkansas	77,000	83,000
Pennsylvania	49,300	48,000
Michigan	37,200	38,000
Indiana	22,200	22,000
Mississippi	21,000	23,300
Montana	19,900	19,700
Kentucky	16,200	16,300
New York	15,000	14,000
West Virginia	10,800	11,000
Ohio	10,800	11,000
Colorado	5,100	5,000
Nebraska	4,200	4,300
Other	.....	.....
	3,847,100	3,830,000

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Legislation

Illinois House Passes Amended Control Measure

Proponents of regulation of the Illinois oil industry to prevent waste were victorious in the Illinois house June 26 when amendments calling for such control were adopted by the house.

The senate, which approved the bills without providing control to prevent waste, was expected to concur in the amendments before adjournment June 30.

The amendments carry the provision that the anti-waste regulation can be invoked only during the present national emergency, and only at the request of Harold L. Ickes, national oil coordinator.

Under terms of the amendments, the State Department of Mines & Minerals is empowered to administer provisions of the proposed act. Far-reaching powers of Director Robert Medill, of the department, under terms of the bill would be terminated at the end of the national emergency.

The controversial amendments were adopted by a voice vote after the house voted 68 to 35 on the motion of Representative Feorge Fitzgerald to kill the amendments.

Adoption of the amendments carries out an agreement reached June 25 among representatives of the opposing oil factions, Governor Dwight Green's office, and the Department of Mines & Minerals. Eight other amendments, all agreed to in committee, also were adopted. They dealt with blast holes, coal mining rights, and other minor features of the bill.

A companion bill, carrying an appropriation for the Department of Mines & Minerals to administer the act, also was amended to increase the fund from $150,000 to $250,000, and was passed.

Although the oil measures were explained as "agreed" bills on the house floor, some factions in the oil industry still voiced opposition to the amendments concerning waste control on the grounds that they would give the federal government direct control of the oil industry in the state. Former Governor John Steele, who was listed as a strong opponent of anti-physical waste provisions of an early administration bill on the ground that it was tantamount to proration, threw his support to the emergency amendment.

Three Texas Oil Bills Await Governor's Action

Late last week, three bills affecting the Texas oil industry still lay unsigned on the governor's desk. They would provide a general proration law, new market demand statute, and would reclassify marginal wells.

June 30 is about the last day the governor can sign these bills, and in the event he should choose not to do so, the legislature is still in session and could pass them over his veto. Each bill received more than a two-thirds vote in each house.

Legislation

[*Continued from page 47*]

Natural gasoline to be blended at refineries was placed at 5.8 percent of the total refinery production, or 3,280,000 barrels. The yield of straight-run and cracked gasoline was estimated at 44.98 percent. Applied to the production of 53,420,000 barrels, this yield gives crude runs of 118,760,000 barrels, or 3,831,000 daily.

The estimate for foreign crude runs to stills is 3,900,000 barrels, while the estimate for crude exports is 2,900,000 barrels, compared with actual shipments of 5,607,000 barrels in July, 1940. Crude oil to be used as fuel and losses is put at 1,500,000 barrels, giving an estimated demand for domestic crude oil of 119,260,000 barrels, or 3,847,100 barrels a day, allocated among the producing states as shown in an accompanying table.

July Allowables Reflect Restriction of Markets

The nation's crude oil production is due to conform closely with market demand, as estimated by the United States Bureau of Mines, under allowables scheduled for July.

Close adherence to the demand estimates will prevail, despite the fact that Southwestern states had to cut back allowables, in reflection of the curtailment of transportation facilities between the Gulf Coast and the Atlantic seaboard. Texas, Louisiana, and New Mexico, reduced allowables under June levels, in accordance with prospects of restricted markets; but Kansas increased its allowable, in recognition of the outlook for larger demand. Arkansas made only a slight change.

Oklahoma retained for July the allowable of 415,000 barrels daily that has been in effect in June, although the Bureau of Mines foresaw an increase of the demand for crude from that state by 30,000 barrels, to 498,500 daily. In June, substantial quantities of Oklahoma crude were taken out of storage, to supplement the supplies available from the wells; and in its forecast for July, the Bureau of Mines anticipated that there would be substantial withdrawals during that month from stocks of Oklahoma and Illinois crudes, in meeting refinery requirements.

The Texas Railroad Commission fixed that state's net allowable for July at 1,347,926 barrels daily, down 63,806 barrels from June. That figure exceeded by 23,926 barrels the Bureau estimate of daily demand for Texas crude during July. But the commission expects actual production to continue about 3.5 percent under the allowables, and therefore to be below the July net allowable by 47,177 barrels and under the estimated July demand by 23,251 barrels daily.

Texas Shutdown

The Texas reduction was accomplished by increasing the number of shut-down days for the state from 9 to 11. The net result of this move was to allow 20 instead of 21 producing days. In the Panhandle area, there will be five shut-down days, July 5, 12, 19, 26 and 31. The rest of the state will be closed down on July 4, 5, 6, 12, 13, 16, 19, 20, 26, 27 and 31. The commission made no change in the list of fields which have been exempt from shutdowns during the month of June.

There were relatively few changes in field allowables. The Talco field was increased 3565 barrels, to 27,638. Big Lake was raised 220 barrels to 5770. No other increases amounted to as much as 200 barrels for field.

The commission cut the Rodessa allowable 900 barrels to 16,034 barrels. Sharon Ridge was reduced 781 barrels to 2024 barrels. South Ward was cut 400 barrels to 5039.

Because the state has appealed from an injunction granted the McElroy field, the allowable there will remain unchanged. The appeal, according to Asssistant Attorney General James P. Hart, amounts to the filing of a supersedeas bond when the state is the appellant, and for that reason, the status quo will be maintained pending final judgment. This is an important ruling, because it may prevent the filing of other suits until the McElroy case is decided finally.

Louisiana's July allowable of 303,397 barrels daily compares with one of 319,500 barrels for June. South Louisiana fields were cut to 234,879 barrels daily from 250,938, and those of North Louisiana to 68,518 from 69,462.

Arkansas set a July allowable of 73,748 barrels daily, compared with 73,612 for June, and New Mexico cut back to 108,600 (same as estimated demand) from 113,000.

The crude production allowable for Kansas was set at 237,400 barrels for July, although 251,322 barrels was nominated. Daily average production during the week from June 14-21 was 231,450 barrels, which established a new peak for the state.

The July daily allowable approaches the maximum capacity of pipe lines carrying from the producing areas to refineries and transporting arteries. There is a remaining volume of some 12,000 barrels which can be filled. T. A. Morgan, conservation director, points out that the state is still far below its capacity insofar as productivity is concerned, as, "without waste or injury to wells Kansas could produce 400,000 barrels of oil per day."

California's Conservation Committee set a state quota of not to exceed 603,000 barrels daily for July, an increase of 28,000 barrels over the June quota of 575,000 barrels. However, allocation of oil for the month was held to 601,939 barrels daily, a net increase of 25,904 barrels over the June allocation total.

No change was made in the state's top allotment figure to any one well, the July top to continue at 142 barrels daily. By liberalizing the power factor controlling proration to intermediate well classifications, an increase in allocation to this class of well of 19,734 barrels daily was ordered. Of this total 11,421 barrels daily would be assigned to wells over the state producing oil of 23.9-gravity or less; while 8313 barrels daily would go to wells producing 24-gravity, or higher.

Newly completed and recompleted wells were to be assigned 10,170 barrels daily of the July allocation, of which 6170 barrels daily was to be contributed from the liberalized total allocation for the state and 4000 barrels daily from abandonments, suspensions and decline of intermediate and marginal wells during June.

California drilling operations during June were expected to result in the completion of 133 new wells, of which 25 would fall in the top-well classification, with over-all potential of 96,682 barrels daily.

July Allowables Reflect Changes in Demand Situation

(Barrels Daily)

	Bureau of Mines Estimate of Demand for July	State Allowable Beginning of July	Difference of July Allowable From Demand	Percent Difference of July Allowable from Demand	State Allowable Beginning of June
Arkansas	77,000	73,748	— 3,252	— 4.2	73,612
California	624,800	*603,000	— 21,800	— 3.5	575,000
Kansas	225,300	237,400	+ 12,100	+ 5.4	232,400
Louisiana	304,000	303,397	— 603	— 0.2	319,500
Michigan	37,200	†38,000	+ 800	+ 2.2	37,500
New Mexico	108,600	108,600	.....	.....	113,000
Oklahoma	498,500	415,000	— 83,500	— 16.7	415,000
Texas	1,324,000	‡1,300,749	— 23,251	— 1.8	1,362,380
Illinois	384,800	§342,150	— 42,650	— 11.1	323,600

* Recommendation of Conservation Committee of California Oil Producers.
† Estimate of actual production that will occur under prescribed regulations.
‡ Texas Railroad Commission's estimate of actual net daily production, allowing for usual under production of 3½ percent under net allowable, which at the beginning of July is calculated at 1,347,926 barrels daily. However, allowable normally increases as new wells are completed. Under July order, most Texas fields were ordered shut down July 4, 5, 6, 12, 13, 16, 19, 20, 26, 27 and 31. Panhandle was ordered shut down July 5, 12, 19, 26 and 31.
§ Average level to which unprorated Illinois production naturally had declined for 4 weeks ended June 21.

April Production Increases For Fifth Consecutive Month

Increasing for the fifth consecutive month, crude production in April averaged 3,702,700 barrels, an increase of 63,000 barrels over the March output but 165,000 barrels under the near-peak average of Apirl, 1940, it was reported June 24 by the United States Bureau of Mines.

Production, however, failed to keep pace with the record-breaking consumption, which resulted in a reversal of the trend in supply and demand with a decline of nearly 400,000 barrels in crude stocks in comparison with a gain of approximately 1,900,000 barrels in March, the bureau disclosed. Total stocks of refinable grades on April 30 were 266,012,000 barrels, compared with 258,066,000 barrels on the same date in 1940.

With the exception of Oklahoma, all leading producing states showed gains over March, the report stated. Output in Kansas, which passed the 200,000-barrel mark in March, rose to a new record of 207,900 barrels a day in April; a new peak of 235,800 barrels a day was reached in the Louisiana Gulf Coast, and Illinois "continued to surprise" with another gain in output—from 335,300 barrels a day in March to 343,200 barrels in April.

The seasonal trends in the yields of gasoline and distillate fuel oil continued in April, with the gasoline yield rising from 43.4 to 43.7 percent and the distillate yield dropping from 13.8 to 13.2 percent, it was reported.

"The demand for motor fuel in April

continued the upward surge which has been so pronounced since the first of the year," the bureau said in reviewing the situation. "Speculative buying, which was believed to have been a powerful stimulant in the first quarter of the year, was eclipsed in importance in April by the rise in industrial activity under the defense program. The domestic demand in April was 55,105,000 barrels, or 16 percent higher than in April, 1940. Exports, including 760,000 barrels out of bond, totaled 2,288,000 barrels, compared with 2,075,000 barrels a year ago. Stocks of finished and unfinished gasoline declined about 3,000,000 barrels in April; the total on April 30 (95,931,000) was about 7,600,000 barrels below last year's level.

"Unlike the experience of March, the increase in the demand for residual fuel oil in April over a year ago was much larger than the increase in distillate fuel oil. The increase in the domestic demand for lubricating oil, though overshadowed by the gain in motor fuel, continued phenomenal with April, 1941 (2,712,000 barrels), 27 percent above April, 1940."

Production of aviation gasoline increased sharply in April, from 1,448,000 to 1,633,000 barrels, as did domestic demand, which rose from 547,000 to 812,000 barrels, it was shown, while transfers to regular gasoline increased from 200,000 to 287,000 barrels, but demand and transfers were offset by a decline in exports from 497,000 to 63,000 barrels, with the result that stocks increased, totaling 7,347,000 barrels at the close of the month against 6,876,000 barrels on March 31.

Figures of the Bureau of Labor Statistics placed the price index for petroleum products in April at 51.9, compared with 49.9 in March and 50.4 in April, 1940. The crude-oil capacity represented by the report was 4,360,000 barrels, giving an operating ratio of 85 percent, against 83 percent in March and 82 percent in April, 1940.

Premier Buys Fort Worth Refinery and Pipe Line

Premier Oil & Refining Company of Texas announced June 28 purchase of The Ohio Oil Company's Fort Worth refinery to process Ranger crude and make gasoline and lubricating oils. The purchaser is also taking over the pipe line system extending from Ranger to Fort Worth, effective July 16, according to J. R. Parten, board chairman of Premier.

The refinery has a capacity of 4000 barrels daily, with $250,000 quoted as price of the transaction. Premier already operates refineries at Cotton Valley, Louisiana, and Longview, Texas, with capacities of 4000 and 3000 barrels, respectively.

The pipe line is 275 miles long, comprised of a 6-inch main line and gathering system of 2- and 4-inch lines. Obtained recently from The Ohio Oil Company by Sam Sklar, Shreveport, Premier acquired 10-year control of its operation, with option to purchase half interest from Sklar after one year. The new operators expect to run 3500 barrels of Ranger production daily to the refinery, and will post the prevailing price in that district.

Sylvester Dayson is president and general manager of Premier, and general offices of the organization are in Longview.

Pipe

Pipe Stocks Depleted by Large Buyers' Purchases

Rapid depletion of tubular-goods stocks in the yards at Memphis and at Houston has brought about a serious situation for some major companies and a great many smaller operators. A few weeks ago stocks of oil-country tubular goods at these points were reported to total between 175,000 and 195,000 tons. Today the stocks probably will not amount to more than 15 percent of that amount, and much of it consists of sizes and weights not in popular demand. This heavy withdrawal of stocks has come about largely by reason of orders placed by three major companies.

In addition to the withdrawals from stocks, orders have been placed by large oil companies with the mills for heavy shipments and orders now being placed cannot be delivered before the latter part of September in the case of some mills, and generally speaking shipments on current orders cannot be filled before middle autumn or even December 1 in some instances.

The remaining stocks of pipe are being zealously guarded by the suppliers and the mills, to take care of customers of small buying power who have not been accustomed to anticipating their orders months in advance.

Of course the situation of various pipe companies will vary somewhat as to stocks and delivery dates, but a disposition to take care of the small customer was apparent in the conversations THE OIL WEEKLY had with all of them.

Asked if they thought that the government might take a step rumored some weeks ago and ask for pipe stock inventories of oil companies in order to require some of them to dispose of surplus stocks to less fortunate companies, most of the pipe men contacted said that they did not believe that such action would be taken although rumors along that line had come out of Washington.

"I think that it is more likely that OPM may, upon priority application from companies having no pipe, divert some of the stocks being rolled on order for those who may already have fair stocks," said one man. "It doesn't seem likely that the government will take from a company pipe which has already passed into an oil company's possession and which will be needed in necessary drilling. On the other hand, if OPM thinks that a company's supply will run it for a given period of time and in the meanwhile a smaller operator who has no stocks is faced with a shutdown, it would work less hardship all the way around to divert to the operator in such a plight, part of the stocks being rolled. Of course this is not an official statement, it is simply my own idea of what may happen."

The situation on one-inch seamless tubing for use in gas lift work is particularly serious. There is no such stock on hand, and a shipment of 75,000 feet now on the way to Houston has been purchased in transit. Another shipment of 150,000 feet is due in August. Deliveries except for this shipment are estimated for November or December.

"We are still in fairly liquid condition at the mill," said one man. "I see no rhyme or reason for this sudden hysterical buying, except that of fear of not being able to get supplies."

"If we are approached by a customer whom we believe has enough pipe on hand to take care of his immediate needs, we try to get him to place an order with the mill, rather than take delivery out of stock," said another man. "Some times he becomes very much upset at this. I wish you would try to get over to the trade that we are doing our very best to take care of the situation and not work undue hardship on any operator or company."

Another representative expressed the belief that the situation is showing some improvement. His company has been able to promise shipments within a month to six weeks, and he said that his office had been given promise of substantial shipments of large pipe for the fourth quarter. The stocks his company has on hand do not contain a great deal of pipe of popular sizes.

"Our tube mills are getting all of the steel they need for rolling," he said. "Deliveries are slowed down by heavy orders of line pipe. Unless we get covered up with pipe-line orders on which there is priority, we will be in good shape on deliveries by the fourth quarter."

Ask Revision of Rule on Pipe-Line Deductions

Humble Oil & Refining Company has requested that the Texas Railroad Commission revise its Rule 9, governing pipe-line deductions, to provide for a higher coefficient of expansion. At a hearing latst week, officials of Humble Pipe Line Company testified that the rule now in effect is satisfactory for crudes ranging in gravity from 15° to 34.9°, but that for higher gravities, a higher coefficient of expansion is needed.

The rule in effect now provides for deductions at the rate of 1 percent for every 25 degrees in temperature above or below 60° F. The new rule requested by Humble is set out below:

"All oil tendered to a pipe line for transportation shall be gauged and tested by a representative of the pipe line prior to its receipt from the shipper; and the shipper shall at all times have the privilege of being present or represented at the gauging and testing. Quantities shall be computed from correctly compiled tank tables showing 100 percent of the full capacity of the tanks in all oil fields of Texas; and corrections will be made for temperature to the basis of 60° F. in accordance with the Abridged Volume Correction Table for Petroleum Oils contained in the Supplement to the National Bureau of Standard Circular C 410, issued April 20, 1937. Pipe lines may deduct the full percentum of basic sediment, water and other impurities as shown by the centrifugal or other tests agreed upon. A further deduction of one percentum for evaporation and loss during transportation shall be made, and the net balance shall be the quantity deliverable by the pipe line. In allowing the deduction set out in this rule, it is not the intention of the commission to affect any tax or royalty obligations imposed by the laws of Texas on any producer or shipper of oil."

Markets Continue Strong; Some Prices Rise Further

Under critical watching by the government's price-control agency, oil markets last week were firm but price increases were rare; limited principally to further advances of lubricants in the Mid-Continent and of gasoline in a few districts.

Gasoline continued in strong demand in all areas, but so far, supplies have been adequate. Movement from Gulf Coast to Atlantic seaboard has been larger than expected, as the industry has put forth special efforts to avoid scarcity in the latter area. Shipments in the interior have been heavy, and in the Mid-Continent it was reported that to some extent scarcity of tank cars was holding back shipments.

Tank Cars

The importance of efficiently utilizing tank cars is generally appreciated now, however, by the industry, the railroads and the government, and it is to be anticipated that henceforth there will be full use of that type of transportation, in alleviating the threatened scarcity of supplies of oil on the East Coast.

Although heating oils currently are going to storage, there is much current interest in them, in view of the threat of scarcity on the East Coast and maybe in the Middle West, in consequence of the shortage of tankers. Severl refiners of the Mid-Continent last week reported inquiries for the light fuel oils in numbers greater than usual for the time of year.

In the Chicago area, refiners and tank car marketers reported, similarly, that heating oil contracts were being renewed earlier than usual. In some instances, supplies were being allocated to old contract customers, and new contracts were not being made; while renewed contracts provided for possible changes of top prices, a provision that was readily accepted by purchasers.

In the Western Pennsylvania refining district, prices of No. 1, No. 2 and No. 3 fuel oils were marked up ⅛ to ¼ cent a gallon last week.

Heavy fuel oils continued in good demand in all districts, although prices were generally unchanged.

Lubricants again were strong, and bright stocks were advanced 1 cent a gallon by some Mid-Continent refiners, while the scarcity of supplies was emphasized by inter-refinery trading.

In the Western Pennsylvania refining district, both bright stocks and neutral oils continued in strong demand, and in some instances, quotations of refiners were higher than in the previous week.

Trends of Operations and Changes in Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Residual Fuel Oil
1938:						
November 12	3,243,250	3,180,000	273,394,000	[6]67,551,000	[4]4,175,000	120,491,000
December 10	3,245,100	3,150,000	[2]269,509,000	68,687,000	32,068,000	118,711,000
1939:						
April 22	3,526,700	3,280,000	277,156,000	[2]87,769,000	21,085,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	[7]25,844,000	[7]108,409,000
May 6	3,580,900	3,275,000	[3]278,607,000	86,216,000	26,167,000	108,597,000
August 5	[1]3,909,400	3,445,000	268,982,000	76,431,000	35,601,000	114,512,000
August 26	[5]1,690,800	3,475,000	246,982,000	73,475,000	37,722,000	116,237,000
October 7	3,435,850	3,505,000	231,564,000	[6]71,152,000	38,549,000	114,397,000
October 21	3,771,550	[2]3,650,000	[3]229,127,000	72,122,000	39,358,000	115,060,000
1940:						
January 27	3,611,600	3,470,000	237,339,000	87,914,000	27,407,000	103,015,000
February 24	3,732,100	3,490,000	240,836,000	96,719,000	25,390,000	103,419,000
March 30	3,841,250	3,585,000	250,561,000	101,370,000	23,778,000	105,081,000
April 20	3,858,550	3,535,000	254,881,000	[1]102,817,000	24,779,000	103,323,000
April 27	3,845,250	3,555,000	256,670,000	102,452,000	24,997,000	102,552,000
May 25	3,835,650	3,580,000	259,330,000	100,297,000	28,356,000	104,015,000
June 22	3,846,450	[2]3,690,000	260,891,000	97,276,000	32,751,000	104,683,000
June 29	3,639,550	3,625,000	262,059,000	95,142,000	33,590,000	104,486,000
July 27	3,690,400	3,555,000	262,579,000	90,173,000	38,981,000	105,924,000
August 31	3,501,350	3,575,000	265,865,000	85,393,000	44,766,000	108,774,000
September 28	3,799,950	3,600,000	263,609,000	82,273,000	47,986,000	108,450,000
October 26	3,640,300	3,565,000	262,746,000	80,891,000	[1]48,893,000	108,475,000
November 9	3,584,200	3,510,000	261,631,000	[6]79,847,000	48,408,000	107,687,000
November 30	3,335,050	3,510,000	262,679,000	80,284,000	46,212,000	106,618,000
December 28	3,385,500	3,585,000	261,552,000	83,274,000	42,266,000	102,620,000
1941:						
January 25	3,599,100	3,625,000	260,093,000	88,762,000	39,039,000	100,297,000
February 22	3,629,650	3,590,000	261,783,000	95,812,000	34,381,000	98,631,000
March 1	3,632,250	3,585,000	263,176,000	96,917,000	33,725,000	97,510,000
March 29	3,746,550	3,625,000	266,187,000	[2]99,727,000	29,949,000	96,152,000
April 26	3,726,850	3,675,000	266,149,000	96,647,000	29,543,000	94,732,000
May 31	3,786,100	3,699,000	262,356,000	93,845,000	33,524,000	92,757,000
June 7	3,816,700	[1]3,880,000	260,956,000	92,522,000	34,305,000	93,384,000
June 14	3,822,750	3,755,000	260,464,000	92,478,000	35,060,000	93,182,000
June 21, 1941	3,857,600	3,845,000	.....	91,916,000	35,736,000	93,281,000
June 21, 1940	3,846,450	[8]3,608,000	[4]259,800,000	95,999,000	31,797,000	104,021,000
Change in past year.	+0.3%	+6.6%	+0.3%	—4.3%	+12.4%	—10.3%

[1] All time peak [2] Peak for year [3] Lowest since April, 1922 [4] Stocks, June 15, 1940
[5] Lowest since October, 1922, due to shut down of six mid-continent states [6] Lowest for year
[7] Prior to April 29, 1939, data did not include stocks at terminals, in transit, etc., except in California
[8] June, 1940, daily average

Eastern Gasoline Stocks Gain; Fuel Oil Shipments Lagging

Latest statistics of the industry, covering the week ended June 21, showed no increasing seriousness of the oil supply situation for the East Coast, as the scarcity of tankers continued to restrict only the movement of heating oil and heavy fuel oil, while shipments of gasoline from the Gulf Coast to the Atlantic seaboard were above, rather than below, normal, in reflection of special efforts to avoid or delay a shortage of that product in the present heavy consuming period.

The gasoline inventory situation on the East Coast actually has been materially improved during the past month. Four weeks ago, the stocks in that region were 2,500,000 barrels smaller than a year previously, but they now are only 500,000 barrels below a year ago. Within the past four weeks, the East Coast inventory was increased 1,463,000 barrels, whereas in the corresponding weeks last year it was reduced 412,000 barrels. The stocks of the area totaled 22,620,000 barrels on June 21, compared with 23,206,000 barrels a year previously.

The improvement of the gasoline inventory position on the East Coast in the past month has been achieved not only by using available tanker space particularly for gasoline, partly at the expense of fuel oils, but also by dipping into crude storage held at the Eastern refineries, as evidenced by the fact that stocks of foreign crude, located mostly in that area, have been reduced 500,000 barrels in the past three weeks.

Through the contra-seasonal stepping up of shipments of gasoline from the Gulf Coast to the Atlantic seaboard, there has been within the past four weeks a withdrawal of 2,113,000 barrels from storage on the Texas Gulf Coast, as compared with a reduction of only 314,000 barrels in the corresponding weeks last year. Coastal Texas stocks on June 21 totaled only 12,517,000 barrels, compared with 14,738,000 barrels a year previously. Coastal Louisiana stocks have been decreasing about the same as at this period last year and are now about 500,000 barrels larger than a year ago.

Gasoline stocks are moderately larger now than a year ago in the Illinois-Indiana-Kentucky district, in Oklahoma-Kansas-Missouri, in Inland Texas and in the Rocky Mountain region. They are about 500,000 barrels smaller in the Appalachian district, and also are down somewhat in North Louisiana and Arkansas.

Largely responsible for the fact that total United States stocks of gasoline are 5,360,000 barrels smaller than a year ago (91,916,000 barrels against 97,276,000) are the decreases of over 2,000,000 barrels on the Texas Gulf Coast and the reduction of 2,614,000 barrels in California inventories.

Stocks of aviation gasoline, included in the above totals, continue about 2,000,000 barrels larger than a year ago.

For the country as a whole, there was a 100,000-barrel addition to stocks of residual fuel oil in the week ended

June 21, and the fluctuations by districts were desirable, having included increases of 341,000 barrels on the East Coast and 23,000 barrels in the Appalachian region. Stocks also increased somewhat on the Texas Gulf Coast and in California, but they were reduced materially in Coastal Louisiana.

In the past four weeks, stocks on the East Coast have shown, however, a net decrease of 17,000 barrels, compared with an increase of 729,000 barrels in the corresponding weeks last year. And on the Texas Gulf Coast, they have increased 545,000 barrels, compared with a gain of only 57,000 barrels in the like period last year.

The stocks of residual fuel oil throughout the United States are about 11,000,000 barrels smaller now than a year ago, but California has had a 12,000,000-barrel withdrawal and the rest of the country in the aggregate has added 1,000,000 barrels.

On the East Coast, the inventory of heavy fuel oil now totals 8,450,000 barrels, compared with 8,844,000 barrels a year ago; and in the Appalachian region the stocks amount to 442,000 barrels, compared with 561,000. The Texas Gulf Coast has on hand about 2,000,000 barrels more than at this time last year, that is, 7,520,000 barrels against 5,611,000. In other districts of the country, inventories are not greatly different from a year ago.

Heating Oil Stocks

United States stocks of gas oil and distillate fuel, consisting largely of heating oil, having totaled 35,736,000 barrels on June 21, were 4,000,000 barrels (12

Wholesale Prices of Refined Products in Principal Markets

REFINED GASOLINE	Range Last Week (Cents a gal.)		Changes from Week Before	
Oklahoma Refineries:				
60 Octane and under	5⅛	5⅜	...	...
63-66 Octane	5½	5¾	...	...
72-74 Octane	5⅞	6⅛	...	...
80-82 Octane, Ethyl	6⅜	7⅛	...	...
Mid-Western Tank Car:				
60 Octane and under	5⅛	5⅜	...	...
63-66 Octane	5½	5¾	...	...
72-74 Octane	5⅞	6¼	...	...
80-82 Octane, Ethyl	7⅛	7⅛	...	...
New York Harbor:				
68-70 Octane	8	8	...	...
72-74 Octane	8	8½	...	...
Min. 80 Octane, '39 Research	8	9	...	...
Gulf Coast:				
60 Octane unleaded	5	5½	...	+¼
65 Octane unleaded	5¼	5½	...	...
68 Octane unleaded	5¾	5¾	...	—¼
70 Octane unleaded	5¾	5¾	...	...
72-74 Octane leaded	5¾	6	...	...
Min. 80 Octane, '39 Research	5¾	6¼	...	...
NATURAL GASOLINE				
Grade 26-70:				
F.O.B. Group 3	3⅜	3½	...	...
F.O.B. Breckenridge, Tex.	3	3	...	...
KEROSENE				
Oklahoma Refineries:				
41-43 water white	4⅜	4¾	...	...
42-44 water white	4½	4⅞	...	...
Mid-Western Tank Car:				
41-43 water white	4⅜	4¾	...	...
42-44 water white	4½	4⅞	...	...
New York Harbor	5¼	5¾	...	...
RANGE OIL				
At Oklahoma Refineries	4	4⅜	...	...
In Mid-Western Market Group 3, basis	4	4	...	...
LIGHT FUEL OILS				
Oklahoma Refineries:				
No. 1 straw	3½	4¼	...	...
No. 3	3⅜	3⅜	...	...
Mid-Western Tank Car:				
No. 1 white	3¾	4⅛	...	...
No. 3	3¼	3½	...	...
New York Harbor:				
No. 1	5¼	5¾	...	...
No. 3	4⅞	5¼	...	...

HEAVY FUELS	Range Last week (Per Bbl)		Changes from week Before	
Oklahoma Refineries:				
No. 6	$0.75	$0.85	...	...
Mid-Western Tank Car:				
No. 5	.85	.85	...	...
No. 6	.85	.85	...	...
New York Harbor:				
No. 5	1.65	1.65	...	...
No. 6	1.35	1.35	...	...
BUNKER C FUEL OIL (Per barrel, ships' bunkers)				
Gulf Coast	$ .85	$ .90	...	...
New York Harbor	1.35	1.35	...	...
DIESEL OIL (Per barrel, ships' bunkers)				
Gulf Coast	$1.55	$1.55	...	...
New York Harbor	2.00	2.00	...	...
Los Angeles Basin, 27 gravity	1.10	1.25	...	...
LUBRICATING OIL (Cents a gal.)				
Oklahoma Refineries:				
Bright Stock, 150-160 viscosity at 210°, 10-25 pour test	18½	19½	...	+1
Neutral oil pale No. 3 color, 150 viscosity at 100°, 0-10 pour test	10½	11¼	...	...
Western Pennsylvania:				
Bright Stock, 145-155 viscosity at 210°, 25 pour test	22	23	...	...
Neutral Oil No. 3 color, 150 viscosity at 70°, 25 pour test	28	33	...	...

United States Crude Oil Production Down Slightly

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (June)	State Allowable (Barrels Daily in June)	BARRELS DAILY FOR WEEK ENDED June 21	June 28
TEXAS—				
Texas Panhandle			80,800	83,100
North Texas			101,700	101,900
West Central Texas			31,400	30,600
West Texas			263,600	263,800
East Central Texas			81,200	81,100
East Texas Field			372,900	373,500
South Texas			212,300	212,200
Texas Gulf Coast			281,500	284,300
Total Texas	1,371,700	1,352,280§	1,425,400	1,430,500
CALIFORNIA—				
Long Beach			41,700	41,100
Midway-Sunset			44,400	38,900
Kettleman Hills			38,600	38,200
Wilmington			83,700	81,100
Others			435,100	426,100
Total California	615,300	575,000*	643,500	625,400
OKLAHOMA—				
Oklahoma City			82,250	91,350
Seminole Area			110,850	109,425
Others			221,025	219,400
Total Oklahoma	459,700	415,000	414,125	420,175
ILLINOIS—				
Salem			90,800	90,350
Louden			62,500	64,000
Centralia			11,700	11,250
Other New Pools			173,400	169,900
Old Pools			11,900	11,780
Total Illinois	345,300		350,300	348,280
LOUISIANA—				
North Louisiana			74,300	76,600
South Louisiana			254,500	248,500
Total Louisiana	319,700	319,500	328,800	325,100
KANSAS	220,400	232,400	231,450	237,300
NEW MEXICO	113,000	113,000	112,000	112,000
EASTERN STATES—				
Pennsylvania Grade	48,000		72,500	73,500
Others, Eastern	52,300		18,600	18,600
Total Eastern States	100,300		91,100	92,100
MOUNTAIN STATES—				
Wyoming	89,300		85,400	84,700
Montana	19,700		19,200	19,100
Colorado	5,000		3,900	3,900
Total Mountain States	114,000		108,500	107,700
MICHIGAN	38,000	37,500†	37,800	39,800
INDIANA	22,000		21,000	20,800
ARKANSAS	83,000	73,612	73,100	73,100
MISSISSIPPI	23,300		29,250	29,400
NEBRASKA	4,300		4,450	4,525
‡Total 8 Prorated States	3,220,800	3,128,292	3,266,175	3,263,375
Total United States	3,830,000		3,870,775	3,865,180

* Recommendation of Conservation Committe of California Oil Producers.
† Estimate of Actual production under prescribed regulations, which do not fix a definite state total allowable.
‡ Texas, California, Oklahoma, Louisiana, Kansas, New Mexico, Arkansas, Michigan.
§ Texas Railroad Commission's estimate of actual net daily production, allowing for usual under-production of 3½ percent under net allowable which at the beginning of June is calculated at 1,411,732 barrels daily. However, allowable normally increases as new wells are completed. Under June order, most Texas fields were ordered shut down June 1, 7, 8, 14, 15, 21, 22, 28 and 30. Panhandle was ordered shut down June 7, 14, 21 and 28.

percent) larger than a year previously, an increase in line with the gain that has occurred in potential demand. However, the gains over a year ago are not satisfactorily distributed, as shipments from the Gulf Coast to the East Coast have been lagging in reflection of the tanker scarcity. Stocks on the East Coast are only slightly larger than a year ago, having totaled 9,725,000 barrels on June 21, compared with 9,526,000 barrels a year earlier. Those in the Appalachian region likewise are up only slightly, while the stocks in Indiana-Illinois-Kentucky are a little smaller. On the other hand, the light fuel oil storage of the Texas Gulf Coast is more than 2,000,000 barrels larger than a year ago, and that of Coastal Louisiana is up about 200,000 barrels. California has had a more satisfactory trend, about 1,000,000 barrels having accumulated since a year ago.

Whereas the light fuel oil stocks of the East Coast were increased only 603,000 barrels in the past four weeks, they expanded 2,308,000 barrels in the corresponding weeks last year. And a gain of 584,000 barrels meanwhile in Indiana - Illinois - Kentucky compared with an increase of 805,000 barrels last year. On the Texas Gulf Coast, 1,060,000 barrels went to storage the past month, compared with an addition of 790,000 barrels in the like period last year.

Crude Oil Stocks

United States Bureau of Mines weekly statistics on crude oil stocks, as well as the above figures on refined products from the American Petroleum Institute, reflect the present difficulties in shipping oil from the Gulf Coast to the East Coast.

In the three weeks from May 24 to June 14, stocks of foreign crude in this country, located largely on the East Coast, were drawn upon to the extent of 506,000 barrels, as Eastern refineries used that oil to supplement supplies brought in from the Southwest. On the Louisiana Gulf Coast, meanwhile, crude stocks increased 407,000 barrels, and there was a 363,000-barrel accumulation of North Louisiana crude in storage within the three weeks. Mississippi crude went to storage in the amount of 259,000 barrels, and there were similar accumulations of 347,000 barrels of East Texas crude, 11,000 barrels of West Texas crude, and 337,000 barrels of Texas Gulf Coast crude. The upper Mid-Continent, at the same time, was called upon for more crude, and stocks of Oklahoma crude were reduced 1,567,000 barrels in the period of three weeks, while those of northern Texas crudes also were cut down a little.

Building Road for New Test On Barco Concession

Colombian Petroleum Company is building road on the Barco concession preparatory to drilling a new test, North Sardinata 1, approximately midway between South Sardinata 1 and Tres Bocas 2. Tres Bocas 2, total depth 1987 feet, may soon be suspended and the rig skidded to the new location. South Sardinata 1 was drilling sand and shale at 3155 feet. Colombian Petroleum's Socuavo 1, total depth 8901 feet, was fishing and awaiting tools. Road to Socuavo 2 location is being graded.

World-Wide Developments

Bolivia Seeks Oil for Use as Mining Fuel

Bolivia is planning to expand her oil operations to provide fuel oil for mining fuel as a substitute for coal, which in the past has been imported from England, declared Raul Zumelzu R, president of Yacamientos Petroliferos Fiscales Bolivianos, the Bolivian government oil company. Senor Zumelzu, accompanied by Ira King, American petroleum engineer who is production superintendent of YPFB, is in Houston studying oil equipment.

A guest of the Houston chapter of Nomads at a luncheon last Friday, together with King and Dougald McDougald, warehouse superintendent of Mene Grande Oil Company at Cabimas, Venezuela, Senor Zumelzu said that the necessity of producing a greater supply of tin and other metals for American defense was being affected by scarcity of fuel, and that the Bolivian government is doing its best to expand its production of oil.

He expressed himself as deeply interested in the American defense program, because, he said, "The defense of the United States is the defense of my country as well."

New War Turn May Revive Equipment Exports to Russia

Oil field equipment men in New York are cautious in views as to what effect Russia's war with Germany may have on exports of American equipment to Russia. On the one hand is a prospect that with Russia fighting the Germans, Washington may find it expedient to be far more generous with export licenses for oil-field equipment to Russia than has been the case in recent months. On the other hand it is pointed out that such a change may wait upon developments of the next few weeks, for if Germany overruns Russia in the style familiar to European countries, there is little chance that equipment will be permitted to reach Russia in time to fall into German hands.

That Russia needs rigs, machinery and tools is virtually certain. Last year equipment to the value of $2,605,313 arrived there from this country. Last January, however, due to the "moral ban" on shipments, this figure dropped to $448,698, but the lifting of the ban in the same month caused exports in February to rise swiftly to $1,514,029. Purchases made but not taken from American warehouses and docks are high. One source estimates the value of such purchases at between 15 and 20 million dollars.

Argentina Wildcats Report Drilling Progress

In Argentina, Ultramar Sociedad Anomina Petrolera Argentina is drilling very hard sand at below 4405 feet in Saladillo 2, Jujuy province. The company's Piedra Clavada 1, Santa Cruz province, is drilling below 3834 feet, and in Salta province, hole was being straightened in Cerro Lumbreras 1, total depth below 1056 feet.

No shows so far are reported in the well at San Cristobal being drilled by Yacimientos Petroliferos Fiscales government oil company. The company is also drilling in northern and northeastern districts of Santa Fe province.

Argentine crude production in first quarter 1941 was 8.6 percent higher than in the same period last year. The gain was due to increased government production, which had a 19.3 percent gain while private output dropped.

American Oil Workers in Iraq Urged to go Home

Despite recent successful termination of British efforts to put down the Axis-inspired native rebellion in Iraq, there are reliable indications that all American citizens, many of them employes of Iraq Petroleum Company, have been urged to leave the country. This development comes at a time when there is evidence that the company, which owns the pipe line from Kirkuk to the Haifa, Palestine, refinery of Consolidated Oil Refineries, will shortly resume operations. During the British - Iraqi hostilities, operations were suspended. Exploratory work and wildcatting are understood to have ceased in recent weeks and will not be resumed for the time being.

New cause for apprehension among companies in the Near East oil fields lies in the advance of German forces into Russia. A successful drive eastward to the Caspian Sea and thence southward into the Baku oil fields would place the advancing Nazis on Iran's northwestern boundary and in position for a thrust against Iraq and Iran.

Alberta Tar-Sand Extraction Plant Starts Operations

Refined products are now being commercially produced from the tar sands of the Athabaska area, northern Alberta, Canada. The first delivery of refined products by Abasand Oils Limited, a constignment of diesel fuel to Consolidated Mining & Smelting Company, was made May 26.

Max W. Ball, president and managing director, who recently returned to Edmonton, Alberta, from the company's operations near Fort McMurray, reported output at the first was about 8 barrels of oil per day, but with increasing experience and coordination on the part of the staff, it has since climbed to more than 200, and for short periods it has been at the rate of more than 400 barrels a day. Recovery is running from 0.9-barrel to slightly more than a barrel of oil from each ton of sand, as compared to the expected ⅞-barrel.

In addition to diesel fuel, the plant is making motor gasoline, light fuel oil, heavy fuel oil and coke. Production of road oils and asphalt is expected to start in the near future. A test on a sample of the untreated gasoline gave an octane rating of 65.

This is the first commercial production of a complete line of refined products from the Athabaska oil sands, which government experts have estimated to contain a greater reserve of oil than all of the world's producing oil fields. The company's holdings contain an estimated 300,000,000 barrels of oil in deposits that are economically minable under present conditions.

U. S. FIELD OPERATIONS

Illinois Basin

Gas in Daviess, Prospective Oil Strike in Posey County

A Daviess County gas strike, and prospects of a small Cypress-sand well in Posey County highlighted the Indiana week.

Daviess County: R. D. Brown et al's Earl McCracken 1, C S½ SW SE 16-2n-6w, 1½ miles north Glendale, Harrison Township, 0.6 million ft gas, Cypress 725-33 ft, new pool; operator moving materials south and northwest offsets.

Posey County: Whisenant & Trenchard's McFadden 1, SW NW SW 16-6s-14w, Black Township, 3 bbls oil 4 hours after shot, Cypress 2480-2505 ft; bottomed 2811 ft; unsuccessfully tested Aux Vases and Benoist.

R. B. Martin and John Davis' Harlem-Wolf 1, SE SE SW 22-7s-15w, Point Township, Tar Springs 2170 ft, salt water, drilling 2300 ft.

Gibson County: Illinois-Indiana Production Corp.'s Stratman Heirs 1, SE NW NW 14-4s-10w, 2 miles east Warrenton, abandoned 2141 ft. Sam Yingling and Bob Hays' Keifer 1, C S½ SW SE 26-1s-12w, Glen Dean 1792 ft, St. Genevieve 2235 ft, abandoned 2413 ft.

Wayne Wildcat Cased; Benoist Oil in Marion

Casing was being cemented in a Wayne County wildcat, while wildcats in White, Edwards and Hamilton counties that recovered oil shows, disappointed on production tests. A Marion County wildcat showed Benoist oil.

Wayne County: Wiser Oil Co.'s Hillard 1, S½ SE SW 27-1n-6e, cementing casing after recovering promising McClosky saturation.

White County: Ryan Oil Co.'s Lamont 1, NE SW SW 33-3s-10e, testing after squeeze job in Benoist, hole filled with salt water when first plug drilled to test pay at 2985-3017 ft. Sam Yingling's E. V. Johnson 1, NE SE NW 5-5s-14w, ½-mile west south end New Harmony field, cemented casing McClosky 2971-78 ft; 30-minute drill stem showed 1080 ft oil; oil show also cored in Cypress. Roche & Voyles' Groff 1, C E½ SE SW 25-33-10e, only small amount oil when plug drilled to Aux Vases following plug-back from dry McClosky, bottomed 3050 ft.

Hamilton County: Jack Chevigny's Phillips 1, SW NW SW 26-6s-6e, swabbed 30 bbls oil, equal amount water Aux Vases pay. Texas Co.'s Shasteen, NE SE NW 27-6s-6e, swabbed water from Benoist, Aux Vases after casing perforations.

Wabash County: Hayes Drilling Co. et al's Mary B. Carson 1, S½ SE NE 16-2s-12w, ½-mile northeast Mt. Carmel field production, swabbed 100 bbls, Benoist 2104-11 ft, less than 30 percent water, no other Benoist production in area.

Edwards County: National Petroleum Co.'s Crackle Heirs 1, 2 miles east Albion field, NW NW SW 5-2s-14w, 5-quart shot Benoist at 2850-66 ft testing; before shot showed 5 bbls.

Marion County: Swan-King's Kotva Heirs 1, SW SW NW 36-4n-2e, 6 miles east Patoka field, coring McClosky 2170 ft, topped 2101 ft; cored 12 ft Benoist saturation, some water, 1931-43 ft; may be taken to Devonian.

Jefferson County: Wiser Oil Co.'s Hoyt Heirs 1, NE NE NW 3-1s-1e, abandoned 2180 ft.

Fayette County: Carter Oil Co.'s Wright 12-D, E½ NW NE 21-8n-3e, Loudon pool, testing Devonian, recovered only oil load after acid. Whisenant & Trenchard's Lilly 25-D, Devonian discovery shut after water encroached, flowing 240 bbls daily, no water.

Washington County: Magnolia's C. Koelling 1, NE NW NE 15-1s-1w, east offset to north extension Irvington field; swabbing 1½ bbls hour natural, Benoist 1523-30 ft, extension well, Powell-Risk's Holle 1, initialed 194 bbls 24 hours.

Williamson County: Arrow Drilling Co.'s Fuller 1, NW SW SE 31-8s-4e, mile east of Pittsburg, cored light streaked show in Tar Springs, topped at 2020 ft; drilling 2400 ft.

Kansas

Phillips County Wildcat May Extend Uplift Trend

A Phillips County wildcat may extend Uplift production trend. Added pipe-line capacity chief requirement to increased Kansas production.

New production peak established week ago; record state allowable for July.

Phillips County: H. L. Wirick's Friebus 1, CW½ SW NW 36-2s-19w, 8 miles northwest Phillipsburg, 11 miles south Nebraska line, drilled solid granite 3861 ft after cutting Arbuckle 3535-39 ft; Topeka and Kansas City-Lansing limes showed sufficiently to plug back; casing ripped opposite Kansas City-Lansing 3334-44 ft, acidizing; acreage farmout Carter Oil Co.

Barton County: Derby Oil Co.'s Bernsdorf-Jenke 5, NW SW NE 33-16-11w, Prusa fld, maximum potential, Arbuckle 3346 ft.

Oklahoma

Pottawatomie County Test Provides Wilcox Field

A Wilcox-sand field, probably small in area, has been proven; a recent Wilcox strike near Otoe has drawn four stakes; wildcatting increases.

Pottawatomie County: Helmerich & Payne, Inc. and Eagle Oil Co.'s Schoolland 1, NW NE 16-7n-5e, northeast edge St. Louis production in Wilcox and Viola, sand at 4111 ft, bottomed 4119 ft in Wilcox, good saturation, normal formation pressure; swabbed 150 barrels, 3 hours, no water; area produces from Wilcox highs usually of minor area; Viola and Simpson produce, but with increasing water.

Logan County: W. C. McBride, Inc.'s Eastwood 3, SW 7-17-1w, new Guthrie field, 15-ft core showed good saturation. Sunray Oil Co.'s Donoghue 2, NWc SE 7-17-1w, 80 bbls hour.

Noble County: Superior Oil Co.'s Faubion 1, SE SW SE 16-22-1e, Wilcox field strike, producing 15 bbls hour, 3/16-in choke, pressure and flowing rate holding up, no water. Four locations staked.

Osage County: Moore Oil Co.'s Farm 2, NW 35-22-8e, Bartlesville 2497 ft, bottomed to 2502 ft, sprayed crude, will test; adjacent wells failed to find evidence of sand in drilling for deeper strata.

Oklahoma City: C.O.&G. test on Anderson-Pritchard acreage, north edge Oklahoma City field, shallow sand, casing 4300 ft.

Nebraska

Extent of Falls City Second Hunton Pay Undetermined

Ohio Oil Co.'s recent discovery of second-zone Hunton saturation in Falls City pool remains of major interest; recoveries may exceed upper zone. Few wells on structure drilled through zone, failing to find oil shows, promoting question on area covered.

Parker Oil Co.'s Sunflower 1, C E½ NE NE 3-7n-9e, drilled granite, abandoned. Lansing 750 ft, Hunton 1160 ft, Viola 1660 ft, St. Peter 2032 ft, no Arbuckle.

West Texas

Permian Discoveries Finaled In Ward and Pecos Counties

Stanolind Oil & Gas Company scored oil discoveries from the Permian in Ward and Pecos counties. Abell field has 2 new oil producers and a big gasser, including 2 that were plugged back after logging dry Ellenberger. Terry County wildcat more promising. Slaughter field leases involve big price.

Ward County: Stanolind's Spencer-Evans 1, north corner W¼ H&TC 53, Block 34, 4½ miles southeast and on a strike from the South Magnolia-Sealy reef type structure, flowed 25 barrels fluid, estimated 30 percent rotary mud and sulphur water, hourly on preliminary test from Permian at 2920-90 ft, with 5½-inch 2910 ft. Bottom water expected as it showed water with oil and gas on formation test. Brown lime topped 2570 ft and Yates sand 2690 ft, elevation 2634 ft. Nearest production is Estes 2-pay area 2¼ miles east and separate type structure.

Pecos County: Stanolind's Conry-Davis 1, Lot 8, H&GN 31, Block 9, 3¾ miles southeast Simpson production in Abell field, flowed small heads oil and drilling fluid while awaiting swabbing test from 100 perforations 3710-3810 ft opposite Tubb zone in Permian. Also making 1 to 2 bbls oil be-

tween 9⅝- and 7-in. Latter set 4820 ft, 5 ft in Ellenberger after plugging back from granite 5740-45 ft, elevation 2376 ft. Missed Simpson beds. Company's Myers-Logan 1, ¼ mile north, running pipe after drill-stem test 3720-47 ft yielded 420 ft oil and 30 ft oil-cut mud with good gas blow. In event both profitable areas will get considerable development this year, also possibly revive The Texas-New Mexico Pipe Line Co., trunk line extension from Crane Station.

Abell: Magnolia's Bowman 1, ¾ mile southeast extension, flowed 254 bbls first 3 hours and 238 bbls 43.8-gravity oil second 3 hours, ½-in choke, regular Simpson level 5170-80 ft. Company's Gerety 1, northwest outpost, dry in Ellenberger 6088-6293 ft, plugged back 6088 ft, cemented 5½-in to perforate Simpson zones that yielded gas, and Baldwin-State 2, nearest producer, awaiting official gauge, having tested 8,150,000 ft gas 1-in choke, casing pressure 2150 pounds. Hole plugged back from Ellenberger 6116-47 ft to 5745 ft. McKee 1, offset most easterly producer, testing through 5½-in 5914 ft after tester yielded 210 ft oil-cut mud in Simpson 5918-40 ft. Unusual faulted condition responsible for cutting about 50-ft section Ellenberger, topped 5808 ft, elevation 2390 ft, then re-entered Simpson. Crockett 3 coring dry Ellenberger 5760 ft; tester at 5699-5727 ft yielded 100 ft oil- and gas-cut mud. Magnolia and Stanolind's McKee-Tex-Mex 2, flowed 78 bbls oil 8 hours ¾-in choke, high gas-oil ratio, having plugged back from Ellenberger 6060-6118 ft to 5292 ft, elevation 2392 ft.

Terry County Wildcat: Texas Co.'s Murphy 1, west edge county, producing comparatively little cut-oil while swabbing acid residue, broken pay 5233-75 ft, elevation 3548 ft. Used 1000 gals acid, negative results, then 134 perforations 5230-51 and 5271-75 ft preceding 3000-gallon acid treatment. Will deepen to water. Showing justifies additional prospecting.

Hockley County: Stanolind strengthened position in Slaughter field through purchase Awoeb Oil Co. and Bond Oil Corp.'s 4 leases, aggregating 700 proved acres with 18 flowing wells, for $1,086,100, including $586,100 payable in notes. Purchaser contracted oil to Atlantic Refining Co. this area, and installing gathering system to deliver via Richardson Pipe Line Co. and Aloco Pipe Line Co. to Hobbs, where Atlantic Pipe Line Co. takes over. Delta Drilling Co.'s Watson 1, NWc SE Labor 56, League 40, east edge Slaughter field, yielded 1 bbl oil and 10 bbls water hourly swabbing after 9000 gallons acid 5000-46 ft.

Deep Wildcats: Phillips Petroleum Co.'s University-Andrews 1, northeast of Embar gas, Andrews County, tested sulphur water 8338-68 ft in Ellenberger, then plugged back to 8226 ft, shutoff failed. Magnolia's Ralph 1, west part county, drilling dry lime 5665 ft. In southeastern Reagan County, Amerada's University 1-RA drilling sandy lime and shale 7690 ft. Magnolia's State-Walton 20, between Keystone and Kermit fields, Winkler County, drilling lime 5620 ft, having given promise production in equivalent Tubb section Permian in about 75-ft zone 4800-4900 ft level. Water was logged at 5141-59 ft, then equally promising saturation 5338-5500-ft zone. However, repeated drill-stem tests showed only gas blow and small volume oil and gas-cut mud. Keystone anticline rated outstanding deep prospect, and slated receive substantial rise drilling to regular Permian as Sid W. Richardson proposes to drill up holdings upon completion his Slaughter field development.

Taylor County

Taylor County wildcat showing for commercial pumper. Second completion for Wimberly pool, Jones County, proves new pay with considerable water showing, and Avoca pool promised west extension.

Taylor County: W. H. Peckham et al's F. & M. Bank-Perry 1, northwest corner Block 5, Grimes County School League 124, 4 miles southwest Stith pool, pumped 70 bbls oil initial, sandy lime 2013-19 ft, elevation 1795 ft.

Jones County: M. J. Delaney et al's Short-Humble 1, SEc SW BBB&C Section 191, ½ mile northwest production in Avoca field and same distance west dry holes, running pipe test Palo Pinto saturation 3240-45 ft. W. D. Brookover and H. W. Lee's Church 1, Wimberly pool, pumped and flowed 296 bbls oil and 160 bbls water initial, sandy lime 2425-46 ft, being shallower than discovery.

Fisher County: Masters Oil Co.'s Fancher 1, C SE SE HT&B Section 55, Block 1, ½ mile west of McCaulley pool discovery, rated at 15 bbls oil with considerable water daily after acidizing perforations 3350-60 ft, with 5½-inch 3373 ft.

North Texas

Mississippian Strike Pending In Young and Jack Counties

Western Young County has new Mississippian strike pending; workover operations still underway on earlier discovery this zone; and west extension indicated for Knox pool shallow oil sand. North Central Jack County also offers Mississippian prospect.

Young County: F. H. E. Oil Co. and Fleming-Kimbell Corp.'s Graham 1, SWc NE TE&L Section 2912, 8 miles southwest New Castle, ran pipe after recovering 90 feet oil-cut mud from Mississippian 4626-76 ft. Also has promising shows Strawn and Bend. Thos. D. Humphrey et al's Williamson 1, semi-wildcat, failed water shut-off in squeezing lower perforations. This Mississippian discovery flowed pipe line oil after 2000 gallons acid injected 4983-5033 ft, then made alternate heads oil and water.

Burns-Larimore deep pool remains question mark regarding importance Mississippian. Shell's Bloodworth 1-A, north offset discovery, yielded salt water from 21 perforations 4938-50 ft opposite Lower Mississippian, topped 4843 ft, 60 ft low. Squeezed off to test upper zone. Consolidated Oil Co.-Ray Oil Co.'s Dunagan 1, mile northwest discovery, installing spudder to deepen from 4949 ft after failure attain steady oil flow when pay 4905-49 ft acidized. Top Mississippian 4898 ft, 115 ft low.

Knox Extension: S. H. Fagadau el al's Guinn-Texaco 1, F. Jaime Survey, was testing oil sand 2799-2805 ft with 7-in 2770 ft, indicating important west extension this zone.

Jack County: Alma Oil Co.'s Maxey 1, NWc W½ S. P. Section 2, A-2233, 6½ miles south of Mississippian production Antelope field, scheduled perforate opposite oil saturation 5355-60 ft and 5300-55 ft in Mississippian, topped 5255 ft. Casing on bottom 5387 ft.

Clay County: Shell's Anderson 1, east offset its Mississippian prolific oil strike on Coleman ranch, entered Mississippian at 6134 ft, 8 ft low, and coring at 6270 ft to penetrate beds prior running pipe. Good porosity and saturation first 100 feet of Mississippian. Company proposes continuous drilling program if area justifies. Continental et al's Avis 2, 3 locations west of Jolly-Ross pool discovery, flowed 222 bbls 45-gr oil 6 hours, ¾-in choke, used 8000 gallons acid Bend saturation 5443-75 ft. Pool has 7 producers and a failure to west.

K-M-A Deep: Consolidated Oil Co.'s Ferguson 28-E, southeast corner Block 7 and on east edge Ellenberger production, showed promise commercial oil production from Bend lime, being a new pay between Strawn and Ellenberger, logged by nearby wells but untested. Ferguson 28-E continued to Ellenberger after yielding 350 ft oil and rotary mud from 42-ft section Bend saturation topped 3864 ft. Company plans twin well to west to new zone. Buffalo Oil Co.'s Ferguson 1-E, 873 ft north by west and recent Ellenberger completion, logged base Strawn 3840 ft, and Bend saturation 3862-96 ft, but didn't test latter. Texas Co.'s Thom 8, southeast extension sector, flowed 60 bbls oil 3 hours open tubing, washed Ellenberger saturation 4397-4401½ ft 750 gallons acid. Seven-in 3803 with 5½-in line top pay.

South Electra: Magnolia's Burnett-Gladiolus 79, SW HT&B Section 6, deepening from 1936-ft oil sand, logged oil sand 2570-90 ft in Strawn, drilling 3135 ft to test Ellenberger.

Cooke County: Sinclair Prairie's Dangelmayr 1, second deep test for Bindel pool, running formation tester after logging broken saturation 3363-75 ft in Ellenberger, topped 3282 ft, being 32 ft low to deep discovery. Company's two outposts Walnut Bend field extremely low and abandoned. Marshall 1, 1¼ miles northwest production, abandoned in Ellenberger 5515-5645 ft, with top Simpson 5212 ft. Atlas 1, 3600 ft north production, quit in Ellenberger 5700-5829 ft. Putman sand topped 5276 ft and Simpson 5419 ft. Harvey Bros. Drilling Co.'s Ware 1, wildcat 2½ miles northeast Anderson-Kerr pool, installed machine to drill plugs 5½-in 2225 ft, broken oil sand to 2230 ft.

Grayson County: Robt. Tolbert and Albert Finston's Jewell 1, seismograph prospect northwest part county, abandoned 6665 ft in Ordovician.

Southwest Texas

Two Pettus Strikes; Wilcox Sand Discovery Indicated

Two Pettus sand strikes on the Mirando trend, testing an apparent Wilcox discovery, and scattered new sand discoveries highlighted the week in Southwest Texas. New locations declined from several prolific previous weeks, but number of rigs in operation increased.

Mirando Trend: Argo Oil Corp.'s Edrington 1, AB&M Sur 61, 2 miles southwest Campana field, cored Pettus sand 3012-23 ft; drill-stem test, seat

3014 ft, 1170 ft oil, 23 pounds, 3/8-in chokes, 20 minutes; 7-in casing 3012 ft to show new field; also gas sands in Cole 1843-80 ft, and Government Wells 2574-88 ft.

Cox & Hamon's C & A. B. Cuellar 5, Duval County, rigging up to pump considerable oil in hole; Pettus sand 3142-52 ft, 7-in 3142 ft, promises new sand for Hoffman.

Lower Gulf Coast: S.E.W. Oil Corp.'s C. W. & Helen Pffuger 1, extended crude production 1½ miles east Agua Dulca field, Nueces County, possibly opened a new sand lens; flowed 157.41 barrels 40.2-gr clean oil day ⅛-in choke, tubing pressure 1250 pounds, casing 1400 pounds; sand 7100-23 ft, bottom 7161 ft.

Seaboard Oil Corp. of Del's J. O. Chapman 9, sec 45, promises new fld 10 miles northwest Chapman Ranch, Nueces County, drilled 4550 ft, perforated 4270-74 ft, swabbed and jetted 27-gr oil, no pressure to be pumped.

Pure Oil Co.'s Frank Spacek 3, new sand West Ganade fld, Jackson County, drilled 6285 ft, plugged back, perforated 4755-65 ft, flowed 102-72 bbls 26-gr oil, no water, ⅛-in choke, 520 pounds tubing, 210 pounds casing pressure, gas/oil ratio 8/1.

William F. Morgan's Boenig et al 1, location north production Woodsboro fld, Refugio County, gas and distillate perforations 6597-6600 ft, drilled 7200 ft, 1800 pounds tubing and 2150 pounds casing pressure, new pay 700 ft below fld sand.

San Patricio County's Midway fld added 2 miles of territory to southwest in 6000-foot sand.

F. M. Boynkin's Scrivener 1, 48 bbls 40-gr oil, 500,000 ft gas, ⅛-in choke, 2050 pounds tubing, 2150 pounds casing pressure, perforations 6070-80 ft, 2-mile southwest extension of 6000-ft sand in San Patricio County's Midway fld.

Joy McCartney's W. V. Isham et al 1, west main Premont fld, Jim Wells County, perforated 3706-16 ft 24 shots, 75 bbls 23-gr oil, ¼-in choke, 150 pounds tubing and 640 pounds casing pressures, building storage for gauge, new sand.

Wilcox Trend: Edwin M. Jones' George West B-3, Section 56, 4 miles southwest George West, Live Oak County, attempted shot above 9733 ft, gun went off accidently, kicked in, flowed gas and salt water, holes squeezed, new ones to be made 9650 ft, intended shooting level, indicates Wilcox fld.

Continental Oil Co.'s George West 1, Sec 35, near Kittie, Live Oak County, gas top Queen City 5340-56 ft, abandoned Wilcox 7511 ft.

Hewitt and Dougherty & Ogden's L. E. Weiss 1, 4 miles east Tuleta, Bee County, gas sand 9664-77 ft; shale with sand streaks 9677-94 ft in Wilcox, drilling below 9750 ft towards 10,000-ft contract.

Shell Oil Co.'s McManus 1, Delmas League, 11 miles southeast Yoakum, Lavaca County, reported running casing 9000-ft contract level to test Wilcox, would open new fld.

Balcones Fault Zone: Trio Oil Co. (H. H. Weinert) located J. J. Ridout 1, west corner J. W. Brown sur, 7 miles northeast Floresville, Wilson County, to drill to Edwards limestone, to be carried 5300 ft to test shows in several previous tests.

East Texas

Barron Deep Has Large Gas-Distillate Well

Big gasser completed Barron deep pool, Limestone County, and gas-distillate producer was added east side Willow Springs field, Gregg County. Failure partially isolates East Long Lake sector from field, eliminating considerable prospective acreage.

Limestone County: Cannon Barron et al's Barron 1, fourth producer for the lower Trinity pool, rated 25,000,000 ft gas with distillate spray, perforated Pettit, topped 5570 ft. Attractive market available this high-pressure sweet gas.

Willow Springs: Union Producing Co.'s Hays-Magnolia 2, east edge field, 5,000,000 ft gas initial, perforated 5317-57 ft, opposite Pettit topped 7195 ft. Hole bottomed in Travis Peak 7400-09 ft. Roger Lacy et al's Horton-Dickson 1, showing oil producer from Pettit perforations 7132-7296 ft, produced 340 bbls fluid, 12 to 15 percent salt water, 22/64-in choke, on 7-day test. Humble and Gulf's Horton-Dickson 2, discovery oil producer for area, remained closed pending completion pipe-line connection.

Long Lake: Tex-Harvey Oil Co.'s Neel 1, southwest of company's recent northeast extension and equal distance east production in field proper, missed oil and gas zones in drilling to water 5432 ft, elevation 305 ft.

Texas Gulf Coast

Clodine Discovery Kills Salt Water Flow; Two Tests Start

Clodine discovery, Fort Bend County, started showing salt water, but was successfully recompleted; an extension test for Lake Creek field prepared a series of tests.

Clodine Field: Providence Oil Co.'s Hatfield 1, discovery, showed salt water while cleaning, cemented 100 bbls 51-gr oil, 9/64-in choke, gas/oil ration 10,000/1. Operator spudded Settegast 1, 3 miles west; moved in for Wing 1, ¾-mile northeast.

Lake Creek Field: Superior Oil Co.'s McWhorter 2, west extension attempt, casing 9977 ft, to test 9745-9779-ft sand; sands also at 9225-40 ft, 9450-60 ft, 9525-60 ft, 9655-70 ft.

Scattered Wildcats: Atlantic Refining Co.'s Foster Lumber Co. 1-A, 2 miles southwest Fostoria, Pressley Gill Survey, Montgomery County, location 10,500-ft Wilcox test. Cockburn's Leveridge 1, Peach Bend area, Fort Bend County, drilling 6500 ft. Jordan Drilling Co.'s Wilcox test, southeastern Polk County, oil and gas shows broken sand 7215-30 ft, contract depth 7500 ft. McDannald Oil Co. preparing 8500-ft test north of Dyersdale field. Oates 1, Edwin Stimpson Survey, Harris County.

Louisiana Coast

New Field in St. Mary and Another Indicated in Orleans

A field discovery was completed in St. Mary Parish, while an Orleans Parish wildcat was installing flow-line connections after blowing wild while pulling core. A flank well in Section 28 field, St. Martin Parish, was preparing to test a new sand.

Orleans Parish: W. T. Burton's L&N Railroad 2, 17-11s-15e, southeast shores Lake Catherine, pulled core at 9889 ft, blew in to flow 150 bbls 40-gr oil, 3200-pound gas pressure; to install flow-line connections.

St. Mary Parish: Humble Oil & Refining Co.'s Marin et al 1, Bayou Sale prospect, perforated at 10,100-110 ft, bottomed 12,487 ft, 9 bbls oil hour, ⅛-in choke, 1700 pounds tubing pressure; new field 6 miles north Horseshoe Bayou field.

Pine Prairie Confirmation: Titanic Oil Co.'s Wexler et al 1, west offset discovery, perforated 8105-20 ft, sand 8086-8133 ft, 100 ft higher than discovery; cleaning into pits, 10/64-in choke, 500 pounds tubing pressure.

Section 28: Superior Oil Co. prepared to test deeper horizon ½-mile west of production; to perforate at 10,854-60 ft, bottomed 11,302 ft, no salt.

Wildcat Progress: Congo Oil Co.'s Dreyfuss 1, 61-7s-9e, Rosedale area, Iberville Parish, 1½ miles southwest 10,025-ft dry hole, materials on ground, projected 10,000 ft; operator controls 7000-acre block. Humble's Abbie Joe area test, Beauregard Parish, drilling hard shale, 11,218 ft. Frank K. Campbell's Bowles 1, southeast Sugartown area, Allen Parish, drilling surface.

North Louisiana

Start Offset to LaSalle Wilcox Discovery

A confirmation test was staked for a new LaSalle Parish Wilcox area, while a Wilcox test for Tensas Parish was moving in materials.

Lake Catahoula Pool: Carter Oil Co., who with Phillips Petroleum Co. owns two-thirds of block on which Hershell Scivally's Louisiana Hardwood Lumber Co. 1 opened a Wilcox pool, staked a north offset, Louisiana Hardwood 2, C NW SE 12-6n-4e, LaSalle Parish. Discovery late gauge, 132 bbls 43-gr oil, 9/64-in choke, tubing pressure 500 pounds, casing 750 pounds; elevation 55 ft, Cockfield 1540 ft, Cook Mountain 2115 ft, Sparta 2260 ft, Cane River 2990 ft, Wilcox 3121 ft, sand 4735-42, 4755-70 ft.

Tensas Parish: Carter and Phillips changed location Tensas Delta Lumber Co. 1 to C NE SE 14-5n-5e; first location under water 2 months; moving in for Wilcox test.

Joanquin-Logansport Area: Superior Oil Co. staked first of six tests for Glen Rose gas-distillate area, Brown-Lewis 1, NE NE 2-11n-16w.

Mississippi

Continue to Assemble Wildcat Acreage

Building wildcat blocks continues in Mississippi despite a year and a half of set-backs since the Tinsley field ushered in the state's first oil production.

Stone County: Danciger Oil & Refineries, Inc., will be third wildcatter in

the Wiggins area; near a structure outlined by wildcats, company is filling block, paying $10 an acre for leases; rig will be moved to location soon; Gulf Refining Co., Harry Morgan and Silas P. Borden already have sunk three tests in the area.

Yazoo County: F. H. Brooks obtained permit to drill 1.75-acre lease, SE NW 19-10-2w, Tinsley field. E. C. Johnston reportedly shot out a high on 4000-acre block northeast Betonia; may drill in Sec. 26-10n-1w. Tentative wildcat staked Sec. 16-10n-2w, near Anding, by C. B. K. Oil Co. on 1000-acre spread.

Madison County: Love Petroleum Co. assigned 212 acres to E. C. Johnston, Sec. 12-9n-1w, to aid in drilling a wildcat.

Rocky Mountain Area

Cole Creek Field, Wyoming Extended Quarter Mile West

Cole Creek, Natrona County, Wyoming, extended ¼-mile west. Eighteen new starts, of which five were wildcats, to indicate continued strengthening of activity.

Cole Creek Field: General Petroleum Corp.'s Nicolyasen 31-21-P, C NE NE NW 27-35n-77w, Shannon sand 4557 ft, 5-in casing, bottomed 4594 ft, 150 bbls oil. Company drilling ¼-mile north extension attempt, State 3-16-S, NW SW NW 16-35n-77w, 1689 ft.

Scattered Wildcats: West States Oil Co. let contract Manning & Martin, Inc. for Humphreys Unit 1, NW SE SE 10-12n-101w, Canyon Creek structure, Sweetwater County, Wyoming; building derrick to test Wasatch formation not to exceed 4000 ft; company has 10,000 acres leased. Western Petroleum Corp.'s Mosier 1, SW SW 31-35n-64w, 5 miles southeast Lance Creek field, Niobrara County, 0.5 million ft wet gas Upper Sundance 511-34 ft; drilling 541 ft towards Basal Sundance and Leo. Montana-Dakota Utilities Co.'s Osweed 1, C NE SW 18-35n-4e, Liberty County, Montana, spudded test of Colorado and Kootenai formations. California Co.'s J. F. Charles 4, SE NW 21-15n-30e, scheduled 8000-ft test of Mosby Dome, Cat Creek field, Garfield County, Montana, passed base Madison, cemented 8¼-in 4718 ft, drilling 4858 ft. Mountain Fuel Supply Co.'s C. L. Sparks 1, C SW SW SE 23-3n-24e, Clay Basin gas structure, Daggett County, Utah, coring Dakota 6016 ft.

California

West Extension Del Valle Production Is Indicated

A west extension for Del Valle feld, Los Angeles County, was indicated, and a Raisin City field test, Fresno County, prepared to test meager oil shows below the regular pay.

Los Angeles County: Fred S. Jasper's Videgain 1, 17-417, west outpost at Del Valle, indicated producer on formation test; Miocene 5600 ft, oil zone 5890 ft, water shut-off 5883 ft, bottomed 5984 ft. Successful completion would brighten prospects of area, dimmed by duster on east flank.

Fresno County: Shell Oil Co.'s Santa Ana & Fresno Lands Co. 1-19, Sec. 19-15-18, Raisin field outpost, to test several thin oil-sand streaks, bottomed 5051 ft. Discovery currently producing 20 bbls 36-gr oil, 1.42 million ft gas, ⅛-in choke, 4742-4807 ft.

New Mexico

New Field Indicated In Lea County

Lea County has a new oil pool in the making that was uncovered on strength of oil show passed up in 1929 by nearby failure. Chaves County's top ranking geophysical prospect in Caprock area abandoned.

Lea County: Harry W. Leonard and Van Welch's State 1, C NW NW 18-20s-33e, filled 1500 ft with oil from lime at 3098-3102 ft, running 7-in to complete, logged anhydrite 1097 ft, salt series 1135-2595 ft, Yates sand 2799 ft, elevation 3523 ft. Located mile southwest Marland et al's Brooks 1, which passed up oil show 3025-30 ft and 3081 ft, then abandoned 4003 ft. Fullerton Oil Co.'s State 1, 7 miles northeast Maljamar, logged top lime 4245 ft, elevation 4256 ft, drilling lime 4310 ft.

Chaves County: L. E. Elliott et al's State 1, C NW NE 16-11s-31e, abandoned in sulphur water 3992 ft, logged Yates sand 1935 ft, red sand beds 2635 ft, lime 3210 ft, elevation 4306 ft.

Michigan

Reed City Has Six Rigs Running; Ten Locations

Six rigs were running and 10 locations surveyed in Reed City field Osceola County. Development for shallow gas in Riverside-Winterfield pool resumed on anticipated 50-well summer program.

Reed City Field: First wide use of rotary for all-way drilling in Michigan likely. Four rigs running on combination programs. Gulf Refining Co. plans all-way rotary drilling to 3600-ft oil horizon, bringing in a Kansas rig and contracting for Noble Drilling Co. to set a rotary in field. Program calls for 8-in casing to 1550 ft, and 5-in on producing horizon. Gulf, on contract, drilled first all-way rotary hole in state in 1939 to 3921 ft.

Weber's Clark 1, SW SE NE 30-18n-10w, ½ mile north production, drilling Traverse 3310 ft.

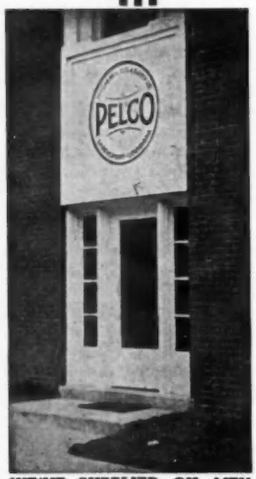
North Adams Pool: Don Rayburn will carry Fox 1, Section 21-19n-3e, field's first Monroe producer, to 6000 ft, Sylvania sand; acidized to 50 bbls day in Monroe, 4300 ft, but dropped rapidly.

Deep Tests: Gulf spotted third cement plug at 5200 ft to shut off gas in Bateson 1, Section 2-14n-4e, Bay County, state's deepest at 8274 ft; gas believed breaking through from old hole, test side-tracked at 6265 ft. Regal Dutch's Heasley 2, Sec. 21-4n-13w, Allegan County, first Salem pool, Trenton test, delayed, jumped bit and fishing job 3792 ft.

Dundee Pool: Sun's Linaberry 1, SE SW SE 10-18n-2w, first test west of discovery in 3-well pool, water sand 3856 ft, plugging back 3851 ft to acidize; showed 1500 ft oil 16 hrs natural.

Speaking of Priorities . . .

In thinking about supplies and equipment we find ourselves suddenly grateful for the fact that we have never felt justified in pronouncing any material thing indispensable or irreplaceable. We've gone in mostly for selling you the virtues of PELCO service, and there isn't much the priorities board need do about anything so inexhaustible. We have a hunch that events now portending will serve to underscore the value and flexibility of a service already experienced when the oil industry was obliged to weather the exigencies of a first world conflict.



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SHREVEPORT LOUISIANA

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Berwick
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New Iberia
Magnolia

UNITED STATES WELL COMPLETIONS

Arkansas

Company, Well and Location	Init. Prod. Bbls.	Depth
Arkansas County—		
Clarence Robinson, Fox 1, 23-5s-3w	*	4372
Clark County—		
Coker Oil Corp., Guess 1, 2-11s-20w	*	612
Union County (El Dorado)—		
Consolidated Oil, Summers 1, 13-18-14s	60	2259
Ouachita County (Mount Holly)—		
Lee Berman, Cook 1, 27-15-18s	*	1650

California

Company, Well and Location	Init. Prod. Bbls.	Depth
Fresno County (Coalinga Northeast)—		
Bandini Pet. Co., No. 55-30B	216	8228
Fresno County (Coalinga Eocene)—		
Superior, Coalinga Fee 1	1320	7302
Kern County (Fruitvale)—		
Western Gulf, KCL B-37	225	3186
Kern County (Mount Poso)—		
General Pet., Heisen 4	365	1916
Shell, Vedder 35	186	1840
Vedder-Rail 15	403	2000
Kern County (Rio Bravo)—		
Superior, Osborne 3-2	1560	11,450
Kern County (Ten Section)—		
Shell, KCL A-7-29	515	8220
Los Angeles County (Del Valle)—		
R. E. Havenstrite, Lincoln 3	*	7906
Los Angeles County (Inglewood)—		
Jefferson Oil Co., Smith 1	2592	8091
Los Angeles County (Long Beach)—		
Shell, Hamilton 5	*	3340
Los Angeles County (Wilmington)—		
Long Beach Oil Dev. Co., No. 28	125	3624
Royalty Service Corp., 15-7-2	320	3610
Selegna Pet. Co., No. 5	187	3636
Union Pacific, UP 180	318	5427
UP 185	236	3596
Wilton Oil Co., No. 12	114	3015
Orange County (Huntington Beach)—		
Signal O. & G. Co., Signal-Bolsa 21-B	577	2490
Sacramento County (Rio Vista Area)—		
Amerada Pet. Corp., W&R Comm. 1	No Test	4300
Santa Barbara County (Goleta Area)—		
Trans Pac. Oil & Dev. Co., Hollister 2-A	*	1573
Santa Barbara County (Santa Maria Valley)—		
Union, Adams 3	1560	2565
Ventura County (Ventura Avenue)—		
Shell, Taylor 139	139	6977
Ventura County (Sespe Area)—		
Signal Pet. Co., Hadley 7	144	3575

*Failures; †Junked; ¶Million cu. ft. gas.

Colorado

Company, Well and Location	Init. Prod. Bbls.	Depth
Rio Blanco (Rangely)—		
Raven O. & Ref., Government 32, s nw ne 31-2n-102w	50	1067

Illinois

Company, Well and Location	Init. Prod. Bbls.	Depth
Bond County—		
Republic Oil Corp., Wafer 1, s½ n½ se nw 36-7n-4w	*	845
Clay County—		
Madden et al, Ging 2, nw se ne 17-5n-5e	15	2389
Effingham County—		
Lynch & Jensen, Burk 1, nw sw se nw 27-6n-5e	175	2295
Fayette County—		
Paul Doran, Kistler 2, ne nw sw 36-6n-2e	47	1621
Carter, Miller 4, se sw se 1-8n-3e	168	1490
Holman 2, ne se se 3-8n-3e	96	1608
Clow 2, c w½ sw ne 15-8n-3e	672	1502
Franklin County—		
Mendenhall et al, Stalcup 3, nw se se 23-6s-2e	480	2114
Shell, C. W. & F. Coal 7, sw se nw 24-6s-2e	170	2169
C. W. & F. Coal "T" 2, n½ nw sw ne 36-6s-2e	360	2172
C. W. & F. Coal "T" 3, n½ se sw ne 36-6s-2e	355	2136
C. W. & F. Coal "RS" 4, n½ ne se nw 36-6s-2e	279	2116
C. W. & F. Coal "RS" 7, nw se nw 36-6s-2e	300	2119
Wegener, C. W. & F. Coal "R" 1, sw sw sw 24-6s-2e	403	2113
C. W. & F. Coal "SM" 1, s½ se sw sw 25-6s-2e	385	2157
C. W. & F. Coal "SN" 2, n½ ne sw sw 25-6s-2e	415	2164
Adkins, Chenault 2, nw ne se 25-6s-2e	254	2131
Orient "R" 1, s½ sw se ne 26-6s-2e	64	2163
Orient "M" 2, se ne ne 36-6s-2e	170	2146
Frazier, C. W. & F. Coal "Q" 1, ne ne sw 25-6s-2e	272	2156
Manley, Lader 1, n½ nw ne se 26-6s-2e	125	2166
Lager 2, n½ ne ne sw 26-6s-2e	115	2123
Pruitt, Minier 1, sw sw sw 30-6s-3e	410	2126
Texas, Pittman 1, se nw nw 3-6s-6e	*	3220
Hamilton County—		
Ohio, Trott et al, s½ nw sw 27-3s-5e	519	3312
Sinclair Wyoming, Hall 6, nw sw se 27-3s-5e	725	3295
Hall 7, c n½ se sw 27-3s-5e	300	3290
D. P. Oil Co., Miller 1, c s½ sw ne 33-3s-5e	*	3385
Kingwood-Exchange, Smith 1, sw nw nw 31-5s-7e	*	3225
Cameron Bros., Mayberry 1, nw sw se 7-6s-7e	699	3010
Pure, Cuppy 4, se ne nw 7-6s-7e (pb 2927)	306	2983
Jackson County—		
Wiser Oil, Oberholt 1, c se sw 22-7s-1w (pb 2025)	15	2387
Jasper County—		
Pure, Wartsburgh 1, c e½ se se 5-5n-10e	109	2797
Keavin 1, c s½ nw nw 8-5n-10e	*	2866
Canny 1, c w½ ne se 17-5n-10e	130	2825
Honey "A" 3, c e½ sw ne 30-5n-10e	80	2815
Whitstone 2, c e½ se ne 36-5n-10e	1465	2880
Marion County—		
Trio Oil, Palsmeyer 1, ne ne nw 19-1n-1e	*	1610
Adams O&G, Pugh 6, sw se ne 29-4n-1e	74	1445
Magnolia, Piddicord 2, nw nw se 34-4n-1e	19	1369
Shell, Clark "A" 1, nw ne se 34-4n-1e	425	1363
Davidson 7, nw se ne 34-4n-1e	87	1476
Davidson 8, se se ne 34-4n-1e	344	1367
Montgomery County—		
Dortomedge, Eglehoff 1, sw sw sw 19-10n-4w	*	628
Pulaski County—		
Case Engineering, City Olmstead 1, se se se sw 22-15s-1e	*	1000
Richland County—		
Pure, Coen 10, w½ ne nw 9-3n-9e	313	3000
Saline County—		
I. H. Williams, McCarty 1, se ne nw 25-9s-6e	*	2645
Shelby County—		
W. H. Sloan, Powers 1, se se se 1-10n-2e	*	1720
Vermillion County—		
R. N. Sylvestre, Trisler 1, ne ne ne 30-18n-13w	*	1775
Wabash County—		
Mabee Dr. Co., Brenes 1, nw sw nw 9-1s-13w	*	2840
Gulf, Zimmerman, s½ sw se ne 9-1s-12w	*	2363
Shell, Hein 4, se ne se 18-1s-12w	139	2057
Walker et al, Harris 1, sw ne nw ne 20-1s-12w	200	2425
Olds, Sturman 1, nw se sw nw 21-1s-12w	170	2382
Wayne Smith et al, Fee 1, s½ sw nw 36-2n-12w	*	1450

[*Continued on next page*]

Summary of Drilling Operations in the United States, Week Ended June 28, 1941

	WELLS COMPLETED								*PERMITS FOR NEW WELLS				
		New Wells Drilled for Oil and Gas											
	Total for Week	Oil Wells	Gas Wells	Failures	†Miscellaneous	Initial Production	Total 1941	Total this Date 1940	This Week	Total this Month	Total 1941	Total this Date 1940	Year Total 1940
Alabama	.....	....	....	....	....	.....	1	3	....	.....	.....	.....	.....
Arkansas	4	1	....	3	....	60	81	94	3	16	85	72	153
California	23	20	....	3	....	11,102	558	545	23	117	544	554	1,042
Colorado	12	2	8	2	....	53	20	3	....	.....	.....	.....	.....
Illinois	99	68	....	16	15	17,227	1,658	1,895	92	385	2,143	2,182	4,532
Indiana	14	7	3	4	....	1,037	251	207	‡17	45	45	.....	.....
Kansas	50	31	2	13	4	78,404	1,048	935	87	264	1,119	1,011	2,048
Kentucky	6	4	....	1	1	64	149	150	‡8	21	21	.....	.....
Louisiana	25	13	3	9	....	2,044	676	841	39	150	836	838	1,658
Michigan	14	5	....	9	....	190	388	636	15	68	401	593	1,093
Mississippi	.....	....	....	....	....	.....	86	99	....	.....	.....	.....	.....
*Missouri	.....	....	....	....	....	.....	6	7	....	.....	8	.....	26
Montana	.....	....	....	....	....	.....	89	87	....	.....	.....	.....	.....
*Nebraska	3	2	....	1	....	1,142	43	.....	7	13	47	.....	69
New Mexico	10	8	1	1	....	1,190	167	371	16	41	202	339	559
New York	26	17	....	....	9	108	391	524	....	.....	.....	.....	.....
Ohio	44	11	12	11	10	337	788	441	....	.....	.....	.....	.....
Oklahoma	46	22	2	14	8	5,509	1,022	1,115	72	205	1,106	943	1,888
Pennsylvania	53	38	3	4	8	44	1,154	1,922	....	.....	.....	.....	.....
South Dakota	.....	....	....	....	....	.....	.....	1	....	.....	.....	.....	.....
Tennessee	.....	....	....	....	....	.....	.....	8	....	.....	.....	.....	.....
Texas	206	150	4	51	1	65,202	4,743	5,321	434	1,262	5,718	6,176	11,170
Utah	.....	....	....	....	....	.....	.....	1	....	.....	.....	.....	.....
West Virginia	13	3	8	2	....	18	326	275	....	.....	.....	364	782
Wyoming	7	6	....	....	1	1,324	56	72	....	.....	.....	1	1
Iowa	.....	....	....	....	....	.....	2	.....	....	.....	.....	.....	.....
Total this week	655	408	46	144	57	185,055	13,703	15,553	813	2,587	12,185	13,073	25,021
Total last week	588	404	32	114	38	181,022	13,048	14,888	695	1,751	11,372	12,692	25,021
Total this year	13,703	8,744	1,105	3,121	733	4,057,455	.....	.....	....	.....	.....	.....	.....

* This tabulation includes those states where weekly data are available; figures for Missouri date from August 10, 1940; Nebraska from August 3, 1940.
‡ No data available before June 14, 1941.
† Includes old wells deepened, water-intake, gas input and salt water disposal wells.

United States Well Completions—*Continued*

Company, Well and Location	Init. Prod. Bbls.	Depth

ILLINOIS—Continued

Heyle-Troupe, Dager 2, nw ne sw 31-2n-11w ..... • 2175

Wayne County—

Pure, Garrison Consol. 1, c w½ sw se 36-2n-7e 83 3070
Ulm 1, c w½ nw se 36-2n-7e..... 88 3090
Hosselton "B" 1, nw sw nw ne 31-2n-8e 463 3035
Rogers 4, c se sw ne 30-2n-8e.. 90 3095
J. W. Sanders et al, Hubbell 2, w½ sw se 30-2n-8e..... 350 3057
Hubbell 1, sw nw nw ne 31-2n-8e 250 3027

White County—

Longhorn Oil, Helm 13, sw ne ne se 22-3s-14w 300 2785
First Pet. Trust, Bump 3, sw se nw 33-3s-14w 60 2818
First Nat. Pet. Trust, Bump 4, se sw nw 33-3s-14w 87 2856
McIntyre 3, sw se sw 31-3s-8e.. 35 3247
Buell & Herndon, Bond 12, c sw se 5-4s-14w 10 2845
Compton et al, Calvin 5, nw ne se 8-4s-14w 124 2842
Grey 1, ne sw sw 21-4s-14w..... 800 2862
Delta Dr., Boultinghouse 9, nw sw sw nw 16-4s-14w..... 68 2973
W. W. Gray, Fee 11-H, ne se ne 20-4s-14w 35 2972
Paul Miller, Ford Heirs 3-B-1, nw nw nw 21-4s-14w..... 10 2147
Sun & Ellis, Jacobs "A" 4, se se ne 28-4s-14w 160 2709
Jacobs "A" 5, se se nw 28-4s-14w 300 2853
Jacobs "A" 7, s½ se ne 28-4s-14w 120 2595
Superior, Ford 17, c n½ nw se 28-4s-14w 300 2725
Tide Water, Dormis 19, se sw se sw 28-4s-14w 70 2736
Widick 2, nw nw se 23-6s-8e.... 25 2764
Sun, Greathouse 29, nw nw sw 33-4s-14w 80 2725
C. D. Neff et al, Greey 1, c s½ se sw 8-4n-10e..... • 3329
Continental, Ackerman 1, ne nw ne 25-5s-10e 20 3097
Fisher Oil, Ellis 2, nw sw se 11-7s-8e 320 2157
Carter, Bolerjack 2, se se ne 23-6s-8e 102 2555
Bolerjack 3, nw se ne 23-6s-8e 176 2530

OLD WELLS DEEPENED

Crawford County—

Fuller, Barnes 1, nw ne sw 7-5n-11w • 2450

Marion County—

Magnolia, Young 84, nw sw nw 28-2n-2e (otd 3455)..... 125 4658
Young 24, nw sw ne 29-2n-2e (otd 3417) 56 4625
Young 66, 21-2n-2e (otd 4568).. 38 4690
Young 80, sw sw sw 28-2n-2e (otd 4506) 80 4640
Young 91, sw nw nw 28-2n-2e (otd 4523) 60 4592
Young 22, ne nw ne 29-2n-2e (otd 4500) 98 4635
Shanafelt 40, sw sw se 29-2n-2e (otd 4509) 130 4630
Ohio, Young Hrs. 38, sw se nw 29-2n-2e (otd 3480)..... 59 4618
Texas, Shanafelt 19, se ne ne 29-2n-2e (otd 3435) 68 4640
Fossieck 15, ne ne sw 29-2n-2e (otd 4498) 96 4650
Maxwell 8, nw ne ne 32-2n-2e (otd 4550) 24 4647
McCollum 25, sw se se 29-2n-2e (otd 4542) 16 4672

GAS INPUT WELLS

Fayette County—

Carter, Dial 2-2, se se se sw 35-9n-3e 1585
Woods 1-1, sw sw sw 36-9n-3e.. .. 1624

Indiana

Gibson County—

Hall Edwards, Rec. Maier 33-A, nw nw ne 14-3s-14w..... 400 2565
Continental, Bozeman Ld. Co. 38, nw ne sw 23-3s-14w..... 96 2885
Bozeman Ld. 41, nw ne nw 26-3s-14w 72 2798
Kleiderer "A" 6, sw ne ne 33-3s-14w 350 2899

Monroe County—

Terry Deskins, Thompson 1, ne nw se 15-9n-1e .....¶0.01 820
Hoosier Public Util., Berrcamp 224, c sw sw 15-9n-9e.....¶1.45 912
C. A. Lynch, Hill 1, nw se nw 7-4s-13w (pb 2593)..... • 3013
Gulf, Wedeking 1, nw se se 23-6s-13w 56 2509
Downen 1, sw nw ne 19-6s-12w.. • 2480
John R. Less, Schreiber 1, nw sw sw 24-6s-13w ..... • 2507
Hollandsworth et al, Egli 1, ne ne sw 19-6s-12w 60 2368

Spencer County—

Paulhamus, Grass 1, nw se se 11-6s-4w 3 784

Vigo County—

Wooters, Ellsworth 1, sw ne ne 16-12n-10w ..... • 2045

Wells County—

H. Clamme, Fee 1, w½ nw nw nw 16-23n-11e .....¶0.01 965

Kansas

Barber County—

Olson Oil, Swartz 1, nw ne 31-31s-11w 832 4294

Barton County—

Pryor & Lockhart et al, Maus 1, c w½ sw ne 9-16s-12w..... • 3428
I.T.I.O., Hoffman "B" 4, c e½ ne nw 7-16s-13w 4527 3356
Continental, Heflin 1, ne sw nw 28-16s-13w 376 3406
Transwestern, Ehler 1, ne se sw 12-17s-11w ..... • 3374
Ehler 2, c w½ se sw 12-17s-11w • 3372
Ohio, Hirsch 2, c e½ nw ne 22-19s-11w ..... • 3471
Vickers, Kerr Est. 1, c n½ nw se 24-19s-11w 2864 3325
C. H. Lebow, Steckel 4, c n½ sw 1-20s-11w 1123 3276

Butler County—

Ramsey Pet., Joseph 2, c n½ nw se se 25-24s-3e ..... • 2740
Cities Service, Wilson 197, ne ne sw 8-25s-5e 98 2011
Wilson 198, se sw nw 8-25s-5e.. 66 2032
Manning 15, ne se sw 5-26s-5e.. 14 2441
Empire 17, nw se ne 17-26s-5e (pb 1715) 41 1998
A. J. Baker, Beadles 3, se se ne 8-27s-6e 30 3150
L. C. Pitts, Wech 1, ne ne se 16-28n-4e ..... • 2194
Adair & Morton, Cannon 4, sw ne nw 15-28s-7e ..... • 3190

Ellis County—

Cities Service, Collahan "A" 24, c e½ se ne 24-11s-17w..... 307 3378
Collahan "B" 4, ne nw nw ne 25-11s-17w 3716 3379
Phillips Pet., Hugh 2, c w½ se ne 14-11s-18w 6634 3377
Lario, Massman 1, c w½ ne sw 18-17s-10w ..... • 3342

Ellsworth County—

Gulf, Janssen 3, c n½ sw sw 29-17s-10w 32 3265

Greenwood County—

Shaffer & Howell, Souder "B" 3, sw nw se sw 16-23s-13e..... 20 1734
Saco Oil, Adams 3, ne sw ne nw 27-26s-13e ..... • 1452

Jefferson County—

Magnolia, Davison 1, se se 32-9s-20e .....¶10.5 1411
A & B Pipe Line Co., Bowers 1, ne ne 5-10s-20e .....¶6.02 1474

Marion County—

Harwood, Novak 9, ne se nw 28-17s-4e (pb 2437) 32 2464

McPherson County—

Shawver et al, Klassen 1B, sw ne nw 21-19s-1w ..... • 3498
Olson Oil, Anderson 1, c w½ nw sw 6-19s-2w ..... • 3006

Rice County—

C. H. Weaver, Link 1, ne ne sw 18-19s-9w 1395 3271
Colorado Pet., Keesling "B" 2, c w½ sw nw 10-20s-9w ..... • 3270
Brunson & Bartlett, Weber 1, c w½ sw nw 19-20s-10w (pb 3281½)... 50 3288
Gulf, Hirsh "B" 1, c e½ ne ne 19-20s-10w (pb 3146).....1949 3325

Rooks County—

Vernon, Bartlett et al, Liebeneau 1, c s½ sw sw 32-6s-19w..... • 3566

Russell County—

R. H. Shields, Geise 5, c n½ sw ne 28-14s-13w 892 2913
Helmerick & Payne, Boxberger 8, c n¼ ne 21-14s-14w..... 226 3124
Stanolind, Rein 8, ne ne se nw 25-14s-14w (pb 3000)..... 164 3236
Alva Billings, Herbel "B" 3, c e¼ sw 26-14s-14w 1279 3011
C. C. Nelson et al, Rusch 1, c e½ se ne 29-14s-14w.....3008 3223
Coralena, Sellens 1A, nw nw nw 17-15s-13w 309 2961
Derby et al, Berry 1, sw sw ne 33-15s-13w 3578 3347
Shell, Sellens 7, sw se sw 33-15s-13w 2140 3357

Stafford County—

Stanolind, Schartz 4, sw nw ne 13-22s-13w 101 3710
Kirkpatrick 3, c w½ ne nw 15-24s-11w 9700 3827
Crawford 4, c e½ ne ne 15-24s-12w 3000 3824
Landon et al, Volker 2, c s½ se sw 1-24s-11w 928 3740

OLD WELLS DEEPENED

Rice County—

Grace Oil, Grossman 3, se ne ne (otd 3374) (pb 3382)..... 80 3388

Russell County—

Liggett, Durham "B" 1, nw se ne 20-11s-15w (otd 3200)..... 36 3349

Skelly, Opdycke 9, c n½ ne sw 29-14s-13w (otd 2936) 59 2998

Stafford County—

Stanolind, Hays 7, c s½ se se 11-24s-11w (otd 3771).....6257 3809

Kentucky

Daviess County—

Ankey et al, Bryant 3, 15-N-31.... 20 1031
Henry Scholl, Weller 7, 2-O-32.... 4 510

Grayson County—

S. R. Berry et al, Porter 1, 15-M-36 • 385

Hancock County—

Leeper Oil, Jett 9, 3-O-33..... 5 705

Henderson County—

W. E. Hupp et al, Pruitt 4, 23-P-26 35 1602

PRESSURE INPUT WELL

Ohio County—

Andy Teller, Whitehouse 18 20-N-33 .. 616

South Louisiana

Ascension Parish (Darrow Dome)—

Humble, Webb 1..... • 7702

Avoyelles Parish (Wildcat)—

S. W. Richardson, Haas 1..... • 8848

Iberia Parish (Bayou Pigeon)—

Plymouth, Drews 1 ..... 271 8156

Iberville Parish (St. Gabriel)—

G. H. Echols, Natalbany B-2..... 300 7816

Jefferson Davis Parish (Welsh)—

Union Sulphur, Bourgeous 2..... • 7022

La Fourche Parish (Golden Meadow)—

Bering Oil Co., Gravois 2 ..... 192 5165

Plaquemines Parish (Venice Dome)—

Tidewater, Buras 10..... 139 10,758

Rapides Parish (Wildcat)—

Chamblee & Pitts, Lee 1..... • 5000

Rapides Parish (Cheneyville)—

Amerada, Weil 20.....¶1.1 & 15 5900

St. Landry Parish (Port Barre)—

Grubb & Hawkins, Watkins 1.... 160 6120

St. Martin Parish (Anse La Butte)—

Glassell & Glassell, Krantz 1.... • 6863
Stanolind, M. Bergeron 1..... 216 5670

St. Martin Parish (West Lake Verret)—

Shell, Salt Dome 1..... • 11,372

Terrebonne Parish (Bay St. Elaine)—

Texas Co., LL&E 4..... 162 8016

Terrebonne Parish (Lake Pelto)—

Texas Co., State 36..... • 7978

West Baton Rouge Parish (Port Allen)—

Amerada, Wilberts 2..... 259 9711

North Louisiana

Caddo Parish (Waskom)—

L. M. Calhoun et al, Scott 1, 6-16n-16w ..... • 60

Caddo Parish (Pine Island)—

Texas Co., Herndon 12, 14-21n-15w 50 1527
Herndon 11, 14-21n-15w..... 55 1540
Stanolind, Dillon Hrs 135, 18-21n-15w 155 1611
Magnolia, Herndon 16, 22-21n-15w 70 1615

DeSoto Parish (Bull Bayou)—

G. H. Neighbors, Ramsey 3, 36-11n-11w ..... • 3612

Union Parish (Monroe)—

Inabinette & Pipes, Jordan 2, 10-21n-3e .....¶0.5 2162
Edwards 1, 11-21-3e .....¶1.0 2107

Ouachita Parish (Monroe)—

Southern Carbon, Richland 9, 26-19n-4e .....¶0.25 2212

Michigan

Allegan County—

A. R. Urion, Voss 2, nw sw sw 35-1n-16w ..... • 1120
Socony-Vacuum, Thomas 2, se sw se 11-4n-13w ..... • 1604
Rex O. & G. Co., Dickenson 1, c s½ s½ sw 31-1n-13w ..... • 1330

Clare County—

Gulf, Woodward 1, ne nw se 24-17n-5w ..... • 3980

Gladwin County—

Sun, Tope 2, se nw nw 36-17n-2w. 65 3882

Isabella County—

Socony-Vacuum, Bandeen 1, c s½ se nw 22-13n-5w..... • 3645
Michigan Devonian, Dimon 1, sw sw sw 34-15n-3w..... 70 3035

Mecosta County—

W. E. Ross, Oliver 1, c s sw 14-15n-8w ..... • 1366

Osceola County—

Chapman Oil, Seavey 1, c n se ne 4-19n-7w ..... • 1660

Ottawa County—

Fisher-McCall, Mackus B4, nw se nw 2-6n-13w 10 1794
Beiber 1, se ne ne 36-5n-13w.... • 1731
Southwest Dev. Co., Riemersma 1, nw nw nw 25-5n-15w..... • 1490
Bridger Basin, Tanis 1, se se sw 1-6n-13w 20 1887

Tuscola County—

Brehm Oil Co., Childs A1, sw sw sw 19-14n-8e 25 3478

United States Well Completions—*Continued*

Montana

Fallon County (Cedar Creek)—

Company, Well and Location	Init. Prod. Bbls.	Depth
Mondakota Dev. Co., Sargents 1, sw sw 32-8n-60e	•	910
Montana-Dakota Utilities, State 158, sw sw 36-131n-107w	¶0.13	1600
Government 156, ne ne nw 2-130n-107w	¶0.25	1450
Government 157, sw ne 2-130n-107w	¶0.2	1450

Glacier County (Twin Rivers)—

Ed Reagan, Tribal 1, sw nw 22-37n-7w	¶8.0	3869

Toole County (Kevin-Sunburst)—

Montana-Dakota Utilities, Stevens 319, ne sw 29-34n-1w	•	1272
Prevol & Shay, Government 7, ne se 10-35n-3w	3	1772

Valley County (Bowdoin)—

Montana-Dakota Utilities, Kemp 636, ne ne 25-32n-34e	¶0.33	1070
Keysttone 638, lot 2, 19-32n-35e	¶0.75	940
Martin 635, se nw 25-32n-34e	¶0.33	1057
Swanson 637, lot 5, 24-32n-34e	¶0.75	760

Nebraska

Richardson County—

Ohio, Bahr 3, se sw 7-1n-16e	300	2280
Harper & Ohio, Siebbernson Acct 1, c n½ ne ne nw 20-1n-16e (pb 2596)	842	2896
National Pet. Oswald 1, nw sw 15-2n-14e	•	2661

New Mexico

Eddy County—

Mac T. Anderson et al, Root 14-A, c nw se 12-17s-29e	200	2700
Aston-Fair et al, Hudson 3, nw sw nw 17-17s-31e	100	3497
Danciger O&R, Turner 10-A, c nw se 18-17s-31e	300	3465
Hammond Bros et al, State-Keyes 2, sw ne sw 15-17s-28e	8	1978

Lea County (Eaves)—

Continental et al, Eaves 2-B-19, c ne nw 19-26s-37e	79	3040
Stanolind, Farnsworth 7-A, c e½ sw sw 18-26-37	¶29.8	2986

Lea County (Eunice)—

Cities Service, Closson 6-B, c sw nw 20-22s-36e	144	3805

Lea County (Lovington)—

Stanolind, State 6-E, c sw nw 1-17s-36e	167	4990

Lea County (Mattix)—

R. Olsen Oil Co., Blinebry-Texaco 3-A c nw sw 29-23s-37e	192	3575

Lea County (Wildcat)—

Helmerich & Payne, State-Phillips 1, c nw sw 3-14s-38e	•	5635

New York

Allegany County—

Vosburg Oil Co., Green farm, Bolivar	10	1284
B. & B. Oil Co., Stohr farm, Genesee	8	1376
South Bolivar Oil Co., McKelvey farm, Bolivar	5	1338
Messer Oil Corp., Shaner farm, Bolivar	9	1433
Ebenezer Oil Co., Emerson farm, Scio	5	1034
Lester Young, Vincent farm, Scio	4	1030
Bradley Prod. Corp., Duke farm, Alma	5	1439
Otsquago Corp., Pike farm, Alma	5	1443
Roy E. Vossler, McEnroe farm, Alma	4	1234
Crowley Bros., Wetherby farm, Bolivar	8	1419
L. H. Thonton et al, Fassett farm, Alma	6	1277
Nova Oil Co., Brown farm, Alma	6	1367
George Sharpe et al, Potter farm, Amity	5	766
Forest Oil Co., Ackerman farm, Bolivar	10	1384
Sloan & Zook, McDivitt farm, Bolivar	7	1420
Daggett Oil Co., Perry farm, Clarksville	6	1411
Reeland Oil Co., Swarthout farm, Genesee	5	1283

WATER INTAKE WELLS

Allegany County—

South Bolivar Oil Co., McKelvey farm, Bolivar	..	1367
Mary M. Scott et al, Scott farm, Bolivar	..	1466
New York Oil Co., Gadsby farm, Bolivar	..	1376
Brothers Oil Co., Crandall farm, Bolivar	..	1362
R. B. Moore No. 6, Daniels farm, Bolivar	..	1387
V. V. V. Franchot, Emerson farm, Scio	..	1247
McEnroe & Brown, Barnes farm, Alma	..	1251
Marsh Oil Co., Withey farm, Bolivar	..	1369
South Hill Oil Co., Harrington farm, Wellsville	..	1268

Ohio

Ashland County—

Lyons, Eberhart 2	¶4.3	2870
Kline, Arndt 1	•	740
Stewart et al, Stewart 3	•	735

Athens County—

Burt Carpenter, Fee 3	1	160
Bern O. & G., Tate 1	¶0.8	854
Hartley, Niggermeyer 1	•	1735

Cuyahoga County—

Hoey & Cummings, Darrow 1	¶1.0	2704

Hocking County—

Preston Oil, Sunday Creek Coal 1769	25	3450

Lawrence County—

Portage Producers, Cambria Clay Products 1	¶0.68	434

Licking County—

Allen Willey, Holtz 2	¶0.87	2617
National Dr. Co., Jones 1	•	2435

Lorain County—

Wm. Dempsey, Bunt 4	•	215

Medina County—

Preston Oil, Carr 1	3	522
Grigsby J-7	5	498
Clapp H-6	5	842
Grigsby K-08	•	535

Meigs County—

Ohio Fuel, Dean 1	¶1.15	1610
Tyree, Rasp 2	¶0.18	3259
Walker Co., Findling 1	•	1660

Morgan County—

W. S. Harris, Workman 1	•	1021
Bern O. & G., Mayle 1	•	1081

Muskingum County—

Atha, Thompson 1	¶1.3	3379

Noble County—

W. C. Harper, Hayes 6	5	232
Hayes 3	•	245
Chaseville O. & G., Rich 1	¶0.02	1 1630

Perry County—

Davis & Hazlett, Starkey 1	250	2735
Preston Oil, Yarger 2	¶0.05 &	40 3385
Snider 1	¶0.03	3107

Stark County—

Dunn-Mar, Lockhart 2	¶0.7	4022

Tuscarawas County—

Columbian Carbon, Benfer 1	¶0.03	4543

Washington County—

James Hall, Amos 2	1	795
Wenzel Oil, Wenzel 4	1	1046
Campbell et al, Liebrand 1	•	1612

Wayne County—

Kemrow Co., Casey 1	¶1.2	3049

INPUT WELLS

Medina County—

R. C. Holmes et al, Hostettler W-16	..	499
Hostettler W-17	..	496
Hostettler W-18	..	486
Preston Oil, Grigsby F-06	..	493
Grigsby F-07	..	476
Clapp F-05	..	487
Clapp G-05	..	497
Clapp J-05	..	516
Clapp J-06	..	492
Clapp K-05	..	505

Oklahoma

Caddo County—

Ray Stephens, Pohlman 1, ne ne nw 33-6s-10w (pb 3413)	153	3536
Roy Starr et al, Crouse 1, ne se ne 7-6n-13w	•	1245

Carter County—

A. L. Tucker, Shores 4, ne sw sw sw 17-4s-2w	500	2114
Gibson & Jennings, Griffin 8, se ne ne se 20-4s-2w	168	2240
Herrell 3, nwc se nw 20-4s-2w	110	2181

Cleveland County—

Delaney, Montgomery 1, se nw ne 13-7n-2w	215	7640

Creek County—

Lewis Prod., Jones 3, nw se sw 32-15n-7e	528	2876
Shell, Jones 4, se nw sw 32-15n-7e	296	2883
Sinclair-Prairie, Kiefer 43, n½ se se 17-17n-12e	20	1525

Jefferson County—

Gulf, Nesmith 1, c s½ nw nw 11-7s-7w	•	4715

McIntosh County—

Mid-Continent, Felix 1, se sw sw 1-9n-9e	•	4247

Kiowa County—

Bud Lewis et al, Wooten Est. 2, sw se se 28-7n-17w	144	1037
Big Chief et al, Trim 1, ne ne se 13-17n-2w	•	5577

Love County—

Batson, Westheimer et al 2, c w½ se se 27-6s-2e	•	3022

McIntosh County—

McNutt & Young, Love 1, ne sw sw ne 1-12n-16e	•	2250

Muskogee County—

Taylor et al, Coleman 1, se se sw se 18-15n-15e	¶0.1	896

Okfuskee County—

Shell, Hicks 2, se se ne 35-11n-8e	249	3429
Burk-Greis et al, Hodges 1, c n½ nw sw 30-11n-10e	•	3758
Devonian, Phillips "A" 4, ne nw sw 26-12n-7e	265	3693
C. L. McMahon, Community 1, ne se se 27-12n-8e (pb 3675)	20	3679
Keener O. & G. Co., Claunch 1, sw ne se 36-12n-9e (pb 3115)	90	3874
Okla. Oil, Fisher 6, ne se ne ne 1-12n-11e	12	2569

Okmulgee County—

E. R. Black, Long 1A, ne nw ne 17-15n-12e	•	2700

Osage County—

B. H. Wooford 1, sw se nw 10-22n-11e	•	2161
Finance Oil, 31, s½ se, 19-23n-9e (pb 2474)	160	2508
Sinclair Prairie, 49, ne sw ne 19-23n-12e	2	1745

Pawnee County—

Aladdin Pet. et al, Francis 1, sw sw nw 4-19n-1w	•	5270
Peter Adamson, Parker 6, se nw sw se 24-21n-7e	•	1176

Pontotoc County—

Scroggins et al, Norman 1A, se ne ne 34-5n-7e	4	1242

Pottawatomie County—

Sinclair Prairie, Regan 5, nw se ne 17-7n-4e	792	4210
Meyer Dr., Triplett 2, nw ne se 33-8n-4e	247	3899
Hall-Jordan, Pensoneau 1, se sw sw 36-10n-3e	572	5227

Seminole County—

Eagle Oil, Mann 1, sw ne ne 31-7n-7e (pb 2208)	¶1.2	2208
Daube et al, Ferguson 1, ne nw sw 19-7n-3e	•	1512
Mid-Continent, Barnhard 2, ne se nw 19-7n-8e	280	1513
Stanolind, Grisso "B" 2, sw ne sw 15-9n-6e	31	2930
McCrabb et al, Smith 1, sw sw sw 36-11n-6e	•	2710

Stephens County—

B. F. Lundy, Priddy 1, sw sw nw 24-1n-9w	•	2305

OLD WELLS DEEPENED

Hughes County—

Olson Dr., Jones 1, se sw se 5-5n-10e (otd 4488)	35	4493

Jackson County—

Burke Roy. Co., Monor 9, sw ne ne 15-1n-20w (otd 1549)	1½	1630

Oklahoma County—

British Am., Powell 1, se ne ne se 22-12n-3w (otd 6462)	108	6607
Sunray, Harn 3, ne ne se nw 27-12n-3w (otd 6455)	412	6541

Osage County—

F. M. Piny 25, nw nw sw 15-24n-8e (otd 1945)	10	2298

Pottawatomie County—

Josaline Prod., Ward 2, sw se nw 33-7n-4e (otd 4181)	•	4243

Stephens County—

Cities Service, Surber 18, nw nw sw sw 33-1s-8w (otd 1707)	84	2307

Pennsylvania

BRADFORD DISTRICT

Ryder Scott Co., Fee	2½	....
Kendall Ref. Co., Fee	1	....
Forest Oil Corp., 2 wells	2	....
Forest Pet. Corp.	1	....
Niagara Oil Corp., 6 wells	6	....
Bradford Tr. Co., 21 wells	21	....
T. H. Givin, Cummings	2	....
George Van Vechten & Sons, Tarr.	2	....

Water Intake Wells

Penn Valley Crude Oil, Fee 2	..	....
Forest Oil Corp., 2 wells	..	....
Forest Pet. Corp., 2 wells	..	....
Niagara Oil Corp., 2 wells	..	....
Merry Bros., Burger	..	....

NEW YORK-PENN GAS FIELD

Belmont Quad. Dr. Corp., Phipps.	•	....

MIDDLE DISTRICT

D. B. McCalmont, Mattern	½	....
South Penn Oil Co., Smith & Race.	2½	....
G. L. Rhodes et al, Rhodes	½	....

BUTLER ARMSTRONG DISTRICT

Pfeifer & Ethridge, Beahm	1	....
Sipe Bros. et al, Smith	•	....

SOUTHWEST DISTRICT

Armstrong County—

T. W. Phillips, Dunmire 2	¶0.31	1842

Fayette County—

Vincent Ryeczek, No. 1	•	2558

Greene County—

Equitable Gas, Vandruff 1	¶0.3	1750
Hart et al, Goodwin 1	•	450

Washington County—

Keystone Gas Co., Keys 1	¶0.13	2974

United States Well Completions—*Continued*

Texas Gulf Coast

Company, Well and Location	Init. Prod. Bbls.	Depth
Brazoria County (Chenango)—		
Stanolind, Smith 1	150	8600
Brazoria County (Hastings)—		
Stanolind, Moore B-3	*	6222
Brazoria County (West Columbia)—		
Texas Co., Hogg 99	*	2405
Phillips 23	408	5840
Brazoria County (Old Ocean)—		
Harrison & Abercrombie, Aaron-Arp 1	269	10,450
Chambers County (Anahuac)—		
Humble, Boyt 7	651	7026
Johnson 36	593	7042
Chambers County (Barbers Hill)—		
Texas Gulf, Barber B-5	158	4744
Kirby B-25	445	5248
Sun, Higgins 6	18	4340
Chambers County (Fig Ridge)—		
Sun, Meckelberg Unit 1	49	9710
Chambers County (Turtle Bay)—		
Stanolind, White 2	156	6640
Fort Bend County (Boling)—		
Mackhank, Farmer C-15	498	4430
Fort Bend County (North Thompson)—		
T. S. Loffland, State 4	162	7933
Hardin County (Saratoga)—		
Rio Bravo, Cotton Fee 537-C	*	1831
Hardin County (Sour Lake)—		
H. F. Baker, Glass Fee 5	123	1602
Hardin County (W. Silsbee)—		
Republic & Houston's Elliott Fee 2	308	6859
Harris County—		
L. Underwood Rountree, Green's Bayou 1	*	3652
Harris County (Dyersdale)—		
Jack Frazier, Griffith 5	396	3503
Van Ezzell 1	254	4080
Jefferson County (Fannett)—		
Gulf, Marrs Mclean 7-E	724	8393
Liberty County (Hull)—		
Republic, Dolbear 169	20	1589
Matagorda County—		
Magnolia, Northern Ranch 1	*	8133
Matagorda County (Markham)—		
C. G. Hamill, Hudson 1	*	1312
Matagorda County (Wildcat)—		
L. A. Wagner's Broughton & Lloyd 1	*	4056
Matagorda County (Blessing)—		
Texas Co., Pierce-State 1	¶	8536
Orange County (W. Port Neches)—		
Phillips, Stark 6	125	4700
Polk County (Segno)—		
Humble, Kirby B-40	124	8195
Gulf, Ragan 2 (pb)	11	9154
Wharton County (Boling)—		
M. K. Culver's Floyd 24	35	324
R. W. Winebrenner Kelly 11	36	427
Wharton County (Lakeview)—		
W. R. Davis, Hortman 1	¶	6752
Wharton County (Withers)—		
Texas Co., Pierce B-74	62	5547

Texas Panhandle

Company, Well and Location	Init. Prod. Bbls.	Depth
Carson County—		
Buchta Oil, Lewis 2	129	3065
E. W. Means et al, Cooper 4-C	39	3177
Gray County—		
King Oil, Simpson 11	220	3270
Rock Oil, Vicars 2	210	3291
Shell, Finley-Hoffman 12	289	2900
Skelly, Schafer 123	382	3310
Taylor Oil, Taylor 3-B	303	2965
Hutchinson County—		
J. E. Crosbie, Inc., Pitts 40	376	2815
Gulf & Panhandle Ref., Dial 104	207	3100
Phillips Pet. Cockrell 67	295	2995
Starnes 2	57	3149
Cy Reiger et al, Herring 3	147	3205
Stanolind, Watkins 25-A	218	3033
Harry Stekoll Oil, Whittenburg 40	179	3150

West Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Andrews County (Wildcat)—		
Mesche Oil, University-Gulf 1	*	4517
Cochran County (Slaughter)—		
Atlantic Ref., Boyd-Humble 13	1150	5065
De nian Oil et al, Duggan 5-B-3	809	5062
H nolulu Oil Corp., Igoe-Smith 5, lab 3	985	4986
Magnolia, Mallet 5-J	1367	5060
Woodley 6	632	4970
Crane County (Sand Hills)—		
Gulf, Waddell et al 24	732	4570
Humble, Tubb 55	1684	4400
Magnolia, Lea 1 (3200-ac)	391	4563
Crockett County (Bean)—		
E. M. Wahlenmaier-Steve Currie, Bean 2-a	*	1558
Ector County (Foster)—		
Atlantic Ref., Johnson 2-H	825	4160
Cities Service, Bagley 1-B	260	4285
M. J. Delaney & Co., Johnson 3-B	1226	4150
Forest Dev. Corp., Moss 10-H	321	4296
Mid-Continent Pet. Corp., Hinkle 3	348	4411
Trinity Dr. Co., Henderson-Humble 8	1204	4277
Fred Turner Jr., et al, Addis 2-B	668	4125
Ector County (Goldsmith)—		
Gulf, Goldsmith 356	209	4227
Goldsmith 359	1562	4211
Ector County (North Cowden)—		
T. P. Coal & Oil Co., Holt 12	874	4520
Gaines County (Seminole)—		
Amerada Pet. Corp., Riley 8	716	5260
Magnolia-Atlantic, H. & J. 11-217	519	5325
H. & J. 1-189	97	5259
Gaines County (Wasson)—		
Amon G. Carter et al, Moore 10-45	867	5033
Carter & Continental, Willard 2-A	1126	5030
Continental, Moore 8-46	872	4989
Hale County (Wildcat)—		
Humble - Stanolind - Standard of Texas, Byrd 1	*	6760
Hockley County (Slaughter)—		
Fain & Riner, Slaughter 3	524	4982
Honolulu Oil Corp., Mallet 5-B-5	936	5008
Magnolia, Mallet 6-G	1388	5025
Milhoan Prod. Co., Fannin-Slaughter 1	714	4968
Pecos County (Abell)—		
Sinclair Prairie, Grove 1	*	6338
Pecos County (Lehn)—		
D. L. Choate et al, Beauchamp 1	*	1995
Pecos County Taylor-Link)—		
Aha Oil Corp., University-Landreth 2-F	5	1675
Dave Breeding et al, University-Humble 6-J	760	1725
Pecos County (Tobarg)—		
Cardinal Oil Co., Tippett-Stanolind 6-K	10	421
Pecos County (Walker)—		
Cooper & McDermott, White-Baker 1	72	2166
Upton County (Gulf-McElroy)—		
Gulf, McElroy 246	414	3171
Upton County (McCamey)—		
T. P. Coal & Oil Co., Shirk 3-C	261	2682
Ward County—		
Gulf, O'Brien 172	337	2656
O'Brien 174	491	3100
W. P. Luse & Ice, Robeson 1	229	3041
Magnolia, Sealy 5-41	399	2916
Sinclair Prairie, Archenhoid 27	460	3027
Winkler County (Halley)—		
Skelly, Halley 40	1100	2890
Winkler County (Hendrick)—		
C. V. Lyman et al, Cowden-Cities 2-A	433	2993
Winkler County (Keystone)—		
Sid Richardson et al, Jenkins-Southland 3	279	3387
Yoakum County (Wasson)—		
Aloco Oil Co., Walker-Texaco 10	184	5261
White-Texaco 6	739	5200
Argo Oil Corp., Comer 3-B	2370	5170

East Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Joiner Area—		
Cook Dr. Co., Alford 11-A	120	3590
Okla.-Texas Trust Co., Neal 7	2500	3778
Kilgore Area—		
Houston Oil, Elder 5	750	3604
Laird 12	1500	3680
C. R. Starnes et al, Money 47	600	3754
John Wrather et al I&GN Ry. 26-A	800	3572
I&GN Ry. 28-A	800	3569
Longview Area—		
Lucy Pet. Co., Christian 9	3000	3614
Anderson County (Cayuga)—		
Tide Water-Seaboard, Wills 8-B	185.0	4075
Anderson County (Long Lake)—		
Tide Water-Seaboard, Monnig Bros 12	80	5262
Franklin County (Talco)—		
Byrd & Frost, Inc., Phillips 13	100	4267
Phillips 16	*	4255
Freestone County (Wortham)—		
Barney Carter et al, Manning 1	36	2981
Kaufman County (Wildcat)—		
T. G. Shaw et al, Wynne 1	†	6767
Smith County (Wildcat)—		
Bryan Payne & Iowa Payne Oil Co., Spring Club 1	*	5206
Van Zandt County (Van)—		
Olsen Oil Co., Riggs 1	*	3010
Wood County (Hawkins)—		
Humble, Parrish 1 (134½-ac)	479	4710
Rice Price 1 (116.34-ac)	270	4788

West Central Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Brown County—		
C. L. Wann et al, Willis 6	5	1280
Callahan County—		
Clark & Young, Diller 4	4	442
John W. Hooser et al, Mobley 2	*	600
Walker & Mounce, Thomason 1	*	598
Jones County—		
W. D. Brookover-H. W. Lee, Church 1 (new pay)	245	2448
Kirk Johnson - Ungren - Frazier, Sayles 7	102	1940
Shackelford County—		
Hickok & Harry Reynolds, Swenson 1-A	83	1524
R. H. Roark et al, Elliott 5	*	840
Taylor County (Wildcat)—		
W. H. Peckham et al, F&M Bank-Perry 1	70	2019

North Texas

Company, Well and Location	Init. Prod. Bbls.	Depth
Archer County (Hull-Silk)—		
J. A. Chapman-Ed. McFarlin, Wilson 7-F	1128	3800
R. P. Dorian & Peterson, Wilson 4	564	3807
Sinclair Prairie, Jones 3	189	3775
Archer County—		
Bridwell Oil Co., Bridwell 3-D, sec 1852	*	1700
H. D. Egger et al, Garvey 1	*	872
Archer County (Wildcats)—		
C. W. Gilliland et al, Symank-Lemmon 1-A	15	1434
C. L. Shive et al, Cowan 1	*	1094
Baylor County (Turbeville)—		
British-American O. P. Co., Turbeville 6	94	2550
Clay County (Antelope)—		
Shell, Coburn 11 (pb 3253)	522	3410
Clay County—		
Akin-Dimock-Costley, Taylor 4-A-E	*	260
Geo. Golden et al, Enyart 3	*	375
Gorman & Christie, Taylor 2	75	1142
Taylor 3	20	1124
Perkins & Cullum, Taylor 8-A	75	1118
Cooke County (Wildcat)—		
Cochran & Cain, Drane 1	*	1854
Cooke County—		
A. F. Hudspeth et al, Trubenbach 9-B	3	906
Humble, Hellman 16	129	1311
Jas. C. Roberts et al, Sicking 5	44	1303
Cooke County (Walnut Bend)—		
Sinclair Prairie, Cox 3-B	200	4913
Jack County—		
Panhandle Ref. Co., Shoun 1-A	120	3079
Montague County—		
J. M. Hawley et al, Bouldin-Crow 5	10	825
Bouldin-Crow 6	10	826
N. H. Martin & Son, King 6	*	1624
L. R. Stewart et al, Edmondson 1	*	846
Throckmorton County—		
Jack Bell et al, Putman 1	*	970
Burk Roy. Co., Housley 5	10	700
Combined Oil Co., Housley 2	15	658
Housley 5	6	732
Wichita County—		
Akin-Dimock-Costley, Dodson 9	38	1326
Ted Norwood et al, Leissler 3	*	1340
United Prod. Co., Cooper 1	*	1352
Wichita County (Wildcat)—		
Craig & Wilson, McKinley 1	*	720
Wichita County (K-M-A Ellenberger)—		
Buffalo Oil Co., Ferguson 1-E	904	4298
Ferguson 3-E	752	4310
Wichita County (K-M-A)—		
King Oil Co., Waggoner Bros.-Gulf 9	264	3794
Wilbarger County (Fargo)—		
Amerada Pet. Corp., Folley 3	464	3985
Wilbarger County—		
Jas. Blair et al, Waggoner Est. 3-B	10	1240
Young County (Wildcats)—		
L. T. Burns et al, Dahse 1	*	5163
Geo. Keith, Jr. et al, Daily 1	*	592
Young County—		
L. T. Burns et al, Bloodworth 2	40	884
E. C. Jeffrey et al, Hill 6	*	1029
Jerome McLester et al, Seddon 1	*	3805
W. F. Palmer et al, Campbell 2-D	*	1003
Marshall 5	45	910
Pemeta Oil Co., Johnson 22	*	557
Johnson 4-A-B	*	554
WATER INTAKE WELL		
Young County—		
H. Y. Oil Co., Larimore 14	*	711

Southwest Texas

CORPUS CHRISTI DISTRICT

Company, Well and Location	Init. Prod. Bbls.	Depth
Bee County (Wildcat)—		
W. C. McBride, Shumbera 1	*	4756
Brooks County (Kelsey)—		
Magnolia, State-Marshall 8	350	4744
Calhoun County (Wildcat)—		
Continental, Moody 3	*	6505
Calhoun County (Duck Bay)—		
Coronado Corp., State Duck Bay 1 (153)	*	5860
Colorado County (Garwood)—		
W. R. Davis, Brownson 2-B	650	6157
Jackson County (LaWard)—		
Collins & Co., McCrory et al 1, outpost	1000	5281
Jackson County (Lolita)—		
Luling, Rose & Sample 1	450	6445
Magnolia, Mitchell 18	350	5291
Ward 11	700	5292
Jackson County (W. Ganado)—		
Pure, Cravens 1, outpost	300	6287
Spacek 3, new sand	250	6285
Jim Wells County (East Alice)—		
Henshaw Bros., Clark 1	300	5402
Jim Wells County (Wildcat)—		
Magnolia, Seeligson Unit 3	*	6500
Nueces County (Agua Dulce)—		
Hawn et al, Wofford 1-C	*	7103
Nueces County (Luby)—		
Stanolind, Spessard 35	250	4341
Nueces County (Minnie Bock)—		
Phillips, Gandy 4	100	3885
Nueces County (Shield)—		
Stanolind, Ocker 2	600	6623

United States Well Completions—*Continued*

Company, Well and Location	Init. Prod. Bbls.	Depth
Nueces County (Wildcats)—		
Brown & Wheeler, Booth k	*	7014
J. V. Calvert, Coopwood 1	*	6515
Refugio County (La Rosa)—		
Nersworthy, Toland 1, outpost	*	6515
San Patricio County (Midway)—		
Gibson, Floerke 2	125	5360
Phillips, Ivey 6	65	5388
San Patricio County (East Mathis)—		
Tom Graham, Blumberg 1, outpost	*	5717
San Patricio County (Wildcat)—		
F. A. Gillespie, Hunt 1	*	6510
LAREDO DISTRICT		
Duval County (Seven Sisters)—		
J. H. Reynolds, Drummond 1-C, outpost	*	2510
Duval County (Casa Blanca)—		
Texas Co., Duval-Fee 43	¶2.0	1012
Duval County (Wildcat)—		
J. W. Owen, Carrillo 1	*	4507
Jim Hogg County (Colorado)—		
G. Andrade III, Trevino 4-B	325	2982
Humble, King-Colorado 20-B	400	2971
Starr County (Rincon)—		
Continental, Slick 26-A	500	4187
Slick 100-A	*	4413
Starr County (Samfordyce)—		
Phillips, Elizondo 4	650	3550
Webb County (Killam)—		
O. W. Killam, Garcia-Villareal 10	66	2054
SAN ANTONIO DISTRICT		
Caldwell County (Tenney Creek)—		
F. W. Wiegand, Rhodes 3	100	2718
Guadalupe County (Elm Creek)—		
J. E. West, Lenz 4	6	834

West Virginia

Company, Well and Location	Init. Prod. Bbls.	Depth
Boone County—		
Owens, Libby-Owens, Peytona Coal 35	¶0.04	5086
Braxton County—		
Pitts. & W. Va. Gas, Mollohan 7792	*	2117
Calhoun County—		
Bowser O. & G., Haught 1	10	2100
Clay County—		
Pitts. & W. Va. Gas, Elk River Coal 7813	¶3.13	1815
Elk River Coal 7812	¶0.06	2263
Jackson County—		
Spratan Gas, Clendenin 3	¶11.33	4948
Everett Starcher, Archer 1	¶1.43	5200
Kanawha County—		
Hays O. & G., Harper 1	¶1.04	5065
Mingo County—		
Virginian Gaso. & Oil Co., Closterman V1-289	4	1456
Pleasants County—		
Gold O. & G., Owens 2	¶0.08 & 4	1951
Putnam County—		
Teavee O. & G. Co., Gibson 1	¶0.29	1012
United Fuel Gas, Oxley 5003	¶0.1	3646
Wirt County—		
Shimer & Leman, Beckner 1	*	450

Wyoming

Company, Well and Location	Init. Prod. Bbls.	Depth
Carbon County (Rock Creek)—		
Ohio Oil, State 13, nw ne 34-20n-78w	175	3732
Fremont County (Maverick)—		
Indian Oil Co., Tribal 2, sw sw nw 23-6n-2w	570	1662
Niobrara County (Lance Creek)—		
Continental, Rohlff 13, c se se se 31-36n-65w	360	5273
Sublette County (LaBarge)—		
Texas Co., Government 1-K, sw sw 27-27n-113w	175	1135
Weston County (Osage)—		
Osage Trust Co., Fee 15, nw ne 21-46n-63w	2	340
Wheedon Oil Co., State 8, w sw ne 16-46n-63w	2	180
OLD WELL DEEPENED		
Natrona County (Salt Creek)—		
Stanolind O. & G. Co., 4SD-3, ne nw sw 26-40n-79w (otd 550)	40	2984

Royalty Unitization Bill Enacted in Michigan

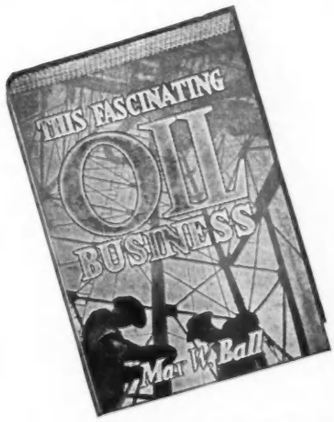
Viewed as the major piece of oil legislation enacted during the 1941 session of the Michigan legislature and signed by Governor Van Wagoner is a royalty unitization bill. Backed by the Oil and Gas Association of Michigan, the act provides for development of lands owned in part by co-tenants, joint tenants and co-partners, and permits a bill in chancery to determine right of majority owners to lease or develop land for gas and oil. A minority owner under the act may elect to become a partner of the developing company, but must post adequate bond to cover his portion of the development costs.

Other new legislation signed by the governor included:

An amendment to the 1929 state severance tax law provides that one-fifth of the tax shall be returned to road funds of the county in which the tax was levied on production, oil or gas. The old act provided that a 2 percent tax be collected on the well-head value of production with the gross divided 40 percent to the state, 20 percent to the county and 40 percent to the townships. The amendment reduces the return from 40 to 20 percent for townships, and returns the other 20 to road funds.

The 1939 intangible tax act was amended to exempt oil royalties.

Bills that found death in committee hoppers sought to authorize Conservation Department to issue quit claim deeds conveying fee title and minerals on certain tax delinquent lands; to require $5 license for well drilling machines permanently mounted on motor vehicles; to discharge record of oil and gas leases by affidavit of owner of land showing rentals overdue 60 days and showing notice had been sent to lessee 30 days prior.



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WILDCAT REPORT
New Starts and Completions

CALIFORNIA

FIRST REPORTS

San Joaquin County—Standard's Bluett 3, sec 23-3-6, lcn, Tracy area.

Solano County—Standard's Suisun Comm. 1, sec 36-4-2, lcn, Fairfield area.

COMPLETION

Santa Barbara County—Trans-Pacific Oil & Dev. Co.'s Hollister 2-A, sec 3-4-29, td 1573 ft, pb 700 ft, perf 570-630 ft, dry, little gas, abnd, Gioleta area.

COLORADO

FIRST REPORT

Moffat County—Al Creer et al's Government 1, c 24-5n-94w, lcn West Axial Basin.

ILLINOIS

FIRST REPORTS

Champaign County—Union Prod.'s James 1, se sw se 18-20n-10e, dr.

Edward County—C. R. Craft's Daubs 1, c e½ sw ne 8-2n-14w, lcn.

Effingham County—Regent Oil's Harwood 2, nw nw se 36-7n-4w, rig.

Hamilton County—J. A. Barber's Hall 1, se nw sw 19-4s-5e, rig, Millison Bros.' Chamber 1, nw nw sw 30-5s-14w, lcn, Texas Co.'s Johnson 1, c w½ ne ne 36-6s-6e, lcn.

Jefferson County—Bowder's Oldham 1, nw nw nw 12-1s-1e, dr, Con Evans' Allison 1, ne se se 33-4n-1e, rig.

Moultrie County—Olson Dr. Co.'s Ekiss 1, c w½ nw ne 31-14n-4e, dr.

Sangamon County—O. A. Rood's Goodrich 1, se sw se 36-16n-2w, dr.

Wabash County—Paul Osborn et al's Dunkel 1, nw nw nw 6-1s-12w, lcn.

Wayne County—Witt et al's Murphy 1, c e½ sw ne 15-3s-5e, rig, Texas Co.'s Lewis 1, c s½ ne sw 5-3s-6e, lcn, Texas Co.'s Draper 1, c n½ nw sw 8-3s-6e, lcn, Hannon's Newton 1, sec 18-3n-5e, rig.

White County—Pure & Carter's Kesner 1, c se se se 7-6s-9e, lcn.

COMPLETIONS

Crawford County—Fuller's Barnes 1, nw ne sw 7-5n-11w, abnd 2450 ft.

Effingham County—Lynch & Jenson's Burk 1, nw sw se nw 27-6n-5e, td 2295 ft, 175 bbls.

Franklin County—Manley's Lader 1, n½ nw ne se 26-6s-2e, td 2155 ft, 125 bbls. E. S. Atkins' Old Ben Coal 1, s½ ne nw se 36-7s-2e, abnd 3053 ft.

Jackson County—Wiser Oil's Oberholt 1, c se sw 22-7s-1w, 15 bbls oil, 6 bbls water, td 2387 ft, pb 2025 ft.

Pulaski County—Case Engineering's City Olmstead 1, se se se sw 22-15s-1e, abnd 1000 ft.

Saline County—I. H. Williams' McCarty 1, se ne nw 25-9s-6e, abnd 2645 ft.

Shelby County—W. H. Sloan's Powers 1, se se se 1-10n-2e, abnd 1720 ft.

Vermillion County—R. N. Sylvestre's Trisler 1, ne ne se 30-18n-13w, abnd 1775 ft.

Wabash County—Mabee Dr. Co.'s Brenes 1, nw sw nw 9-1s-13w, abnd 2480 ft. Gulf's Zimmerman 1, s½ sw se ne 9-1s-12w, abnd 2363 ft. Wayne Smith et al's Fee 1, s½ sw nw 36-2n-12w, abnd 1450 ft. Heyle-Troupe's Dager 2, nw ne sw 31-2n-11w, abnd 2175 ft.

White County—Compton et al's Grey 1, ne sw sw 21-4s-14w, Aux Vases 2820-62 ft 800 bbls, td 2862 ft. C. D. Neff et al's Green 1, c s½ se sw 8-4s-10e, abnd 3329 ft. Continental's Ackerman 1, ne nw ne 25-5s-10e, pay 2830-38 ft, pb 2957 ft, td 3097 ft, 20 bbls.

INDIANA

FIRST REPORTS

Daviess County—D. R. Brown, Inc.'s Brown 1, c s½ sw se 16-2n-6w, dr.

Gibson County—Yinglin & Hayes' Keiffer 1, c s½ sw se 26-1s-12w, dr, Gulf's Conrad 1, se ne nw 10-3s-9w, dr.

Jasper County—A. A. Douglas et al's Horton 1, se ne ne 1-29n-5w, dr, A. C. Thomas et al's Davison 1, sw ne sw 25-30n-7w, dr.

Posey County—Joe Dawson et al's Aldridge 1, se sw se 36-5s-15w, lcn.

Sullivan County—T. H. Drake et al's Curry 1, c ne nw 11-9n-8w, rig.

Wells County—Vicker Oil Co.'s Keller 1, sec 15-24n-14e, lcn.

COMPLETIONS

Posey County—C. A. Lynch's Hill 1, nw se nw 7-4s-13w, abnd 3013 ft.

Vigo County—Wooters' Ellsworth 1, sw ne ne 16-12n-10w, abnd 2045 ft.

Wells County—H. Clamme's Fee 1, w½ nw nw nw 16-23n-11e, 10,000 ft gas, 965 ft.

KANSAS

FIRST REPORTS

Butler County—Clyde Parker's Hannebohm 1, ne sw se 15-24-4e, sp.

Cowley County—Pryor & Lockhart's Bice 1, se se se 24-30-5e, lcn, Wood & Farwell's Ramey 1, cw½ nw sw 20-33-8e, mach.

Phillips County—Aladdin Pet. Co.'s Wiltrout 1, c s½ se ne 18-5-20w, lcn.

Reno County—Central Pet.'s Dyck 1, c w½ nw sw 26-22-13w, mim.

Russell County—Central Pet's Stevens 1, ce½ sw sw 3-13-14w, rig.

COMPLETIONS

Butler County—Marylyn Oil Co.'s Freeman 1-A, se se se 6-28s-5e, Lansing 1740 ft, abnd 1861 ft.

Phillips County—Helmerich & Payne's Lloyd 1, c e½ se se 5-4s-17w, Anhydrite 1640 ft, Topeka 2886 ft, Lansing 3158 ft, Viola 3541 ft, Arbuckle 3681 ft, abnd 3830 ft.

Rice County—Hartman et al's Brothers 1, c n½ nw ne 17-21-6w, Topeka 2448 ft, Lansing 2985 ft, Conglomerate 3517 ft, Mississippi 3526 ft, sso 3530-38 ft, abnd 3540 ft.

Saline County—Stanolind's Karber 1, c n½ sw se 5-16-1w, Arbuckle 3433-48 ft, pb 2700 ft, washed with acid, swb show, pb 2674 ft, 1000 gals acid, water fillup, abnd.

Stafford County—W. P. Faulkner's Ward 1, c e½ se sw 21-21-13w, rig, lcn abnd.

KENTUCKY

FIRST REPORTS

McLean County—J. C. Miller et al's Tanner 1, sec 24-M-29, lcn.

Union County—Sun & Ky. Nat. Gas' Blue 1, sec 6-N-21, lcn.

COMPLETIONS

Grayson County—S. R. Berry et al's Porter 1, sec 15-M-36, abnd 485 ft.

Ohio County—Stewart & Snyder's Bennett 1, sec 10-L-30, 1,000,000 ft gas, 1437 ft.

SOUTH LOUISIANA

FIRST REPORTS

Iberville Parish—Congo Oil Co.'s Dreyfuss 1, Rosedale pros, sec 61-7s-9e, mim.

COMPLETIONS

Avoyelles Parish—S. W. Richardson's Haas Land Co. 1, 2 mi nw Eola fld, 30-1s-2e, abnnd 8848 ft.

Rapides Parish—Chamblee & Pitts' Lee Lbr. Co. 1, South Catahoula Lake, 6-5n-3e, abnd 5000 ft.

NORTH LOUISIANA

FIRST REPORTS

Claiborne Parish—Crow Dr. Co.'s O'Bannon 1, 30-22n-4w, lcn.

Tensas Parish—Carter Oil and Phillips Pet.'s Tensas Delta 1, c ne se 14-5n-5e, lcn.

LaSalle Parish—Carter Oil's Louisiana Hardwood 2, c nw se 12-6n-4e, lcn.

MICHIGAN

FIRST REPORTS

Allegan County—John Iten's Barnard 1, nw se ne 33-1n-14w, dr.

Kent County—A. S. Cochran's Vander 1, sw sw se 3-5n-12w, rig.

Oceana County—American Dr. Co.'s Davis 1, ne nw sw 8-16n-16w, dr.

Ottawa County—M. C. Oldt's Busscher 1, sw ne sw 28-5n-13w, rig.

COMPLETIONS

Clare County—Gulf's Woodward 1, ne nw se 24-17n-5w, Dundee 3893 ft, abnd 3980 ft.

Isabella County—Socony-Vacuum's Bandeen 1, c s se nw 22-13n-5w, Dundee 3545 ft, abnd 3645 ft.

Mecosta County—W. E. Ross' Oliver 1, c s sw 14-15n-8w, abnd 1366 ft.

Osceola County—Chapman Oil Co.'s Seavey 1, c n se ne 19n-7w, abnd 1660 ft.

Ottawa County—Southwest Dev. Co.'s Riemersma 1, nw nw nw 25-5n-15w, Traverse 1476 ft, abnd 1490 ft. Fisher-McCall O. & G. Co.'s Beiber 1, se ne ne 36-5n-13w, Traverse 1715 ft, abnd 1731 ft.

MISSOURI

FIRST REPORT

Adair County—Johnson Oil's Early 1, nw nw se 1-61n-12w, mach.

MONTANA

FIRST REPORTS

Flathead County—Hoerr-Jenson's Sheriff 1, c nw nw 24-30n-21w, dr 291 ft.

Hill County—Callison & Edwards' Hanson 1, sw se nw 25-33n-15e, dr 1205 ft, Havre area.

Liberty County—Montana-Dakota Utilities Co.'s Osweed 1, c ne sw 18-35n-4e, dr 20 ft, Haystack Butte.

COMPLETION

Glacier County—Ed Reagan's Tribal 1, sw nw 22-37n-7w, 8,000,000 ft gas, Madison lime, td 3869 ft, Twin Rivers Nose, new fld.

NEBRASKA

COMPLETIONS

Gage County—S. F. Miller's Berthoud 1, e½ nw sw 2-4n-6e, temp abnd 825 ft.

Otoe County—Parker Oil Co., Sunflower 1 c e½ ne ne 3-7n-9e, Lansing 850 ft, Hunton 1160 ft, Viola 1660 ft, St. Peter (Wilcox) 2032 ft, conglomerate 2090 ft, pre-Cambrian 2102 ft, granite 2126 ft, abnd. John Findeiss & Zeigler's Ritter 1, c ne ne 26-7-12e, lcn abnd.

NEW MEXICO

COMPLETION

Lea County—Helmerich & Payne, Inc.'s State-Phillips 1, c nw sw 3-14s-38e, elev 3816 ft, base salt 3124 ft, Yates sand 3250 ft, Yates grains 3270 ft, San Andres lime 4705 ft, abnd 5635 ft.

OKLAHOMA

FIRST REPORTS

Kiowa County—Kelly Wells, Inc.'s Oster 1, c sw ne nw 33-7-17w, lcn, Mathews-Lewis' Brazell 1, ne ne ne ne 33-7-17w, sp.

Lincoln County—Allied Material's Hicks 1, nw nw nw 25-13-6e, lcn, Dunnett Oil Co.'s Brown 1, nw nw sw 17-15-4e, sp, Dunnett Oil Co.'s Luckenbill 1, sw se se 29-15-5e, rig.

Logan County—Olson Oil Co.'s Paulk 1, c n½ nw se 33-18-3w, dk.

Love County—J. Baldwin's Hill 1, cnw nw se 26-8-2e, dr 6000-ft test.

Osage County—Ohio Osage's 1, c e½ e½ nw 32-22-9e, dr, J. Swartz's 3-A (Twin) sw sw ne 16-23-9e, dr.

Seminole County—P. J. McIntyre's Hanning 1, 2-9n-9e, sp.

COMPLETIONS

Caddo County—Roy Starr's Crouse 1, ne se ne 7-6n-13w, Simpson 1125 ft, Wilcox 1156 ft, water 1170-75 ft, increasing, base Wilcox 1206 ft, abnd.

Jefferson County—Gulf's Smith 1, c s½ nw nw 11-7-7w, Cisco 1500 ft, Canyon 2040 ft, Deese 4280 ft, Arbuckle 4563 ft, abnd 4715 ft.

Seminole County—Mico Oil's Davis 1, ne ne ne 33-10-8e, Cromwell 3488 ft, sw, pb 3551 ft, abnd.

NORTH TEXAS

FIRST REPORTS

Wichita County—Bell O&G Co's Powell 41, C. Winters sur, A-322, Ellenberger test, dr 1030 ft.

Young County—L. T. Burns et al's Ragland 1, nec w½ TE&L sec 257, sp, Mississippian test. Paul Atchley et al's Deitrich 1, nwc se TE&L sec 196, lcn. W. R. Stafford et al's Wolverton 1, swc ne TE&L sec 225, lcn.

COMPLETIONS

Archer County—C. W. Gilliland et al's Lemmon-Symank 1-A, sw part blk 11, Meade Pasture subd, new pool, oil sand 1418-31, shale to 1434 ft, pumped 15 bbls. C. L. Shive et al's Cowan 1, nec se blk 28, Jefferson csl, abnd 1094 ft.

Cooke County—Cochran & Cain's Drane Est. 1, 520 acres, E. Lankford sur A-566, abnd 1854 ft.

Wichita County—Craig & Wilson's McKinley 1, swc Wm. Anglin sur A-2, abnd 720 ft.

Young County—L. T. Burns et al's Dahse 1, sec e 48¾-ac w½ lot 18, I. Holman sur A-130, Bend 4494 ft, Mississippian 5060 ft, abnd 5163 ft. Geo. Keith Jr. et al's Daily 1, sw part J. R. Cooke sur A-1405, abnd 592 ft.

WEST TEXAS

FIRST REPORTS

Garza County—Ed. McAdams et al's Stoker 1, c ne H&TC sec 942, blk 97, sp.

Lynn County—Ross Sport et al's Rice 1, c nw nw E. L. Ry. sec 18, blk 11, lcn.

COMPLÆTIONS

Andrews County—Mascho Oil Co.'s University-Gulf 1, c nw nw sec 19, blk 9, elev 3194 ft, anhydrite 1830 ft, solid lime 4020 ft, abnd sul w 4517 ft.

Hale County—Humble et al's Byrd 1, c se ne T. T. Ry. sec 17, blk K, elev 3251 ft, anhydrite 1115 ft, salt series 1180-1370 ft, Yates sand 1460 ft, San Andres between 2230-50 ft, San Angelo 3470 ft, Mississippian 6605 ft, granite 6745 ft, abnd 6760 ft.

WEST CENTRAL TEXAS

FIRST REPORTS

Brown County—Claude Campbell et al's Smith 1, sec 1, Waco Mfgr. Co. sur, sp.

Coleman County—States Oil Corp.'s Featherston 1, nwc of M. J. Goble sur, A-118, 3 mi e Novice, lcn.

Eastland County—Thomason & Heydrick's Beal 2, nwc sw se J. W. Clifton sur A-187, sp.

Shackelford County—L. P. Blosser et al's Matthews 1, near sec sw sw sec 35, Blind Asylum Lands, sp.

COMPLETIONS

Jones County—W. D. Brookover-H. W. Lee's Church 1, sec blk 88, DeWitt csl, leag 126, new pay Wimberly pool, elev 1748 ft, p&f 245 bbls oil, 132 bbls water, sandy lime 2425-2488 ft.

Taylor County—W. H. Peckham et al's F. & M. Bank-Perry 1, nwc blk 5, Grimes csl, leag 124, elev 1795 ft, 70 bbls sandy lime 2013-19 ft, new pool.

EAST TEXAS

FIRST REPORTS

Anderson County—Cecil Stein et al's Davey-Royal 1, nwc tr and M. Rogers sur, coring 430 ft.

Cherokee County—Bobby Manziel et al's Douglas 1, sec 19-ac tr, J. W. Brock sur, 2½ mi sw Bullard, mim.

Gregg County—Roger Lacy et al's Flanagan 1, 345-ac tr, Hayden Edwards sur, rur deep test.

Smith County—O. L. Ross et al's Rushing 1, swc 28-ac tr, Jacob Herrin sur, 2 mi se Whitehouse, cem sur pipe 200 ft.

COMPLETIONS

Kaufman County—Tom G. Shaw et al's Wynne 1, B. S. Newman sur, elev 394 ft, Georgetown 4017, first Glen Rose 5225 ft, massive anhydrite 6123-6255 ft, jkd 6767 ft.

Smith County—Iowa Payne Oil Co.-Bryan Payne's Spring Lake Club 1, 179.4-ac tr, John Lane sur, 5 mi n Tyler, elev 432 ft, Pecan chalk 3252-3480 ft, Austin 4007-4707 ft, sub-Clarksville sd 4722-36 ft, Woodbine 5049 ft, abnd 5206 ft.

TEXAS GULF COAST

FIRST REPORTS

Fort Bend County—Providence Oil Co.'s Settegast 1, Joel McCrary sur, 3 mi w Clodine discovery, rig.

Tyler County—Rockland Oil Co.'s Kountze 2, 1 mi ne Rockland, E. Smith sur, lcn.

Montgomery County—Continental's Fraser 1, East Willis area, J. M. de la Garza sur, Harry Edwards contr, lcn.

Walker County—Hogg Oil Co.'s Gibbs Bros. & Wynne Estate 1, Black Creek area, 9 mi n Huntsville, Chas. W. Stewart sur, mi.

Wharton County—Barnsdall & Sam Harrison's Wallace-Hancock 1, 3 mi s Hillje fld on 160-ac lse in L. A. Miller sur, sec 6, Martin Thompson contr, sp.

COMPLETIONS

Harris County—L. Underwood Rowntree's Green's Bayou 1, Clinton, or Green's Bayou area in S. C. Hiroms sur, abnd 3652 ft.

Matagorda County—Magnolia's Northern Ranch 1, W. A. Hurd League, abnd 8133 ft. L. A. Wagner's Broughton & Lloyd 1, 7 mi ne Palacios in H. Sheppard sur, abnd 4045 ft.

Wharton County—W. R. Davis' Hortman 1, I&GN sur sec 70, n El Campo, td 6752 ft, pb and completed as gasser 3400-3411 ft, 6 bbls fluid day with gor 29,200/1, new fld.

SOUTHWEST TEXAS

FIRST REPORTS

Duval County—E. B. Cox and J. L. Hamon's Fite 1, BS&F sur 87, 1½ mi sw Kreis fld, dr below 1550 ft.

Goliad County—H. W. McCormick and A. P. King, Jr.'s Kidd sur, 4½ mi n Goliad, mi 5000-ft test.

Hidalgo County—W. R. Davis, Inc.'s Dawley-Jefferson Unit 1, blk 13, Closner sur, por 71 and 72, s Alamo, mi 8500-ft test.

Jackson County—Magnolia's Vordick 1, Branch sur, 1½ mi e La Ward fld, dk 5400-ft test.

Jim Wells County—W. B. Osborn and Superior Oil's Almond 1, SA&MGRR sur 12, 4 mi sw Alfred, mi 5400-ft test. William H. Spice, Jr. et al's Reed & Lindsay 1, Lavaca gr, 2½ mi sw Alice, lcn 5700-ft test.

Live Oak County—Brauer, Beacham & West's Atkinson 1-C, Ayers sur, 3 mi ne Calliham, lcn 1000-ft test.

Nueces County—Forest Dev. Corp.'s Keemel 1, blk 5, Nueces River Irr. Park subd, 2 mi ne Robstown, 5750-ft test.

Starr County—Graham Bros.' Garza 1, porc 71, 7 mi n Roma, lcn 2000-ft test.

Wilson County—W. L. Marshall et al's Sanders 1, Herrera gr, 1 mi sw Lavernia, lcn 1400-ft test.

COMPLETIONS

Bee County—W. C. McBride, Inc.'s Shumbera 1, sur 16, abnd 4756 ft.

Calhoun County—Continental's Moody 3, sec 9, blk E, abnd 6505 ft.

Duval County—J. W. Owen et al's Carrillo 1, sur 372, abnd 4705 ft. J. H. Reynold's Drummond 1-C, sec 392, abnd 2510 ft.

Jackson County—Collins & Co.'s McCrory & Westhoff 1, Clare League, 485 bbls, ¼-in ch, 580 lbs tp, 730 lbs cp, perf 5219-29 ft, extends LaWard fld ½ mi e. Pure's Spacek 3, perf 4755-65 ft, 102.72 bbls, ⅛-in ch, tp 520 lbs, cp 210 lbs, gr 26, water none, g/or 8/1, new sand West Ganado fld, td 6285 ft.

Jim Wells County—Magnolia's Seeligson-Unit 3, sec 61, abnd 6500 ft.

Nueces County—Brown & Wheeler's Booth 1, lot 13, Swisher sur, abnd 7014 ft. J. V. Calvert's Coopwood 1, sec 23, abnd 6515 ft.

Refugio County—Norsworthy Pet. Co.'s Toland 1, sec 39, abnd 6515 ft.

San Patricio County—F. A. Gillespie & Son's Hunt 1, blk 12, sur A, abnd 6510 ft. Tom Graham's Blumberg 1, sec 13, near East Mathis pool, abnd 5717 ft, gas, spray oil in higher sands.

Natural Gasoline Output And Stocks Rise in April

April production of natural gasoline averaged 6,972,000 gallons a day, a substantial increase over the 6,660,000 gallon average of March, it was reported by the United States Bureau of Mines June 11.

The chief gains in output, the bureau said, were in the Panhandle, East Texas field and other parts of eastern Texas.

Total production for the month was 209,160,000 gallons against 206,472,000 gallons in March, it was announced.

Stocks increased during the month from 223,902,000 to 231,168,000 gallons, a reduction in stocks at refineries from 106,218,000 to 101,598,000 gallons being more than offset by an increase in stocks at plants and terminals from 117,684,000 to 129,570,000 gallons, it was stated.

"Air and Gas Compression" Details Present Practice

Results of recent researches in properties of gases, especially in regard to compressibility, critical data and specific heats, are covered in "Air and Gas Compression," by Thomas T. Gill, Union Oil Company of California.

It makes available specific information on practical applications of theories of compression and gas measurement, particularly with reference to technical details. The author has selected and presented data most needed by those whose work deals with air and gas compression.

The book includes a chapter on flow of gas in pipe lines, based on the Weymouth equation. Included also is series of tables designed to reduce the labor required in computing pressure drop in pipe lines. The solution of problems is based on equations, tables and alignment charts, an arrangement that enables the reader to reader nearly all computations in several different ways.

The volume includes 181 pages, 6 x 9 inches, and 35 illustrations. Copies may be obtained from The Gulf Publishing Company, Drawer 2608, Houston, at $3 a copy.

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Squeaks from the Bull Wheel

Explanation

"Doctor, what's the difference between rheumatism and gout?"

"Well, first put your thumb in a vise, and screw it so tight that you can no longer endure it. That's rheumatism. Give it one more turn and that's gout."

Shouldn't Tell Now

"Last night I had an awful pain in my arms."

"Who was she?"

Wise

He sneaked in at three
With guilt in his eyes;
She asked him no questions,
She knew all the lies.

Freak

"That young sailor of yours should be in the museum for living curiosities."

"Why father! How can you say that?"

"Well, I noticed as I passed through the hall late last night that he had two heads on his shoulders."

Phonetic

"What is your favorite sport, doctor?"

"Sleighing."

"I mean apart from your profession."

Urge

"You know Edith, every time I see you my heart beats faster. I feel the urge to do bigger and better things, I feel so strong and virile. Do you know what that means?"

"Sure, it means in about five minutes you and I are going to have a wrestling match."

Obviously

"Is there anything worse than to be old and bent?"

"Yes, to be young and broke."

Example

"Give me a sentence containing the word 'analyze'."

"My sister Anna says she never pets, but oh, how analyze."

Caution

"Do you think kissing is unhealthy?"

"It would be right now. My husband is looking."

Page Mr. Ickes

Surrounded by big refineries and thousands of producing wells in the South Arkansas oil district, a truck bearing the float of one of the big producers and refiners ran out of gasoline in the middle of the big parade opening the three-day celebration, "Twenty Years of Oil in Arkansas."

The driver replenished his tank from a nearby source and resumed the line of march to finish on time.—Shreveport Times.

Worked—Partly

Two men left a banquet together; they had dined exceptionally well.

"When you get home," said one, "if you don't want to disturb your family, undress at the foot of the stairs, fold your clothes neatly and creep up to your room."

The next day they met at lunch.

"How did you get on?" asked the adviser.

"Rotten!" replied the other. "I took off all my clothes at the foot of the stairs, as you told me, and folded them up neatly. I didn't make a sound. But when I reached the top of the stairs—it was the wrong house."

Off the Old Block

"Say, dad, remember the story you told me about the time you were expelled from school?"

"Yes."

"Well, isn't it funny how history repeats itself."

Season is On

"Talk about big fish! You know the one I caught last week was so big it pulled me into the river."

"Got a good wetting, I suppose?"

"Oh, no; thank goodness, I landed right on top of the fish."

What's Yours

A Scotchman walked up to a friend at the bar and began telling him about a hunting trip. "We shot a couple of bears," he said, "but the biggest thrill was tracking yures."

"What's yures?" asked the friend.

"I'll have a beer, thanks," replied the Scotchman.

Just as they reached the bottom of their glasses, the friend remarked, "Well, I'll have to be going. Got to get home and do my chores."

"What chores?" asked the Scotchman.

"Beer, please," said the other.

Modern Youth

"Dad, I need some money. Have you any work you want done?"

"No, I haven't right now, son."

"Then how about putting me on relief?"

Social Success

"It must be awful to be a debt collector. You must be unwelcome wherever you go."

"Not at all, practically everybody asks me to call again."

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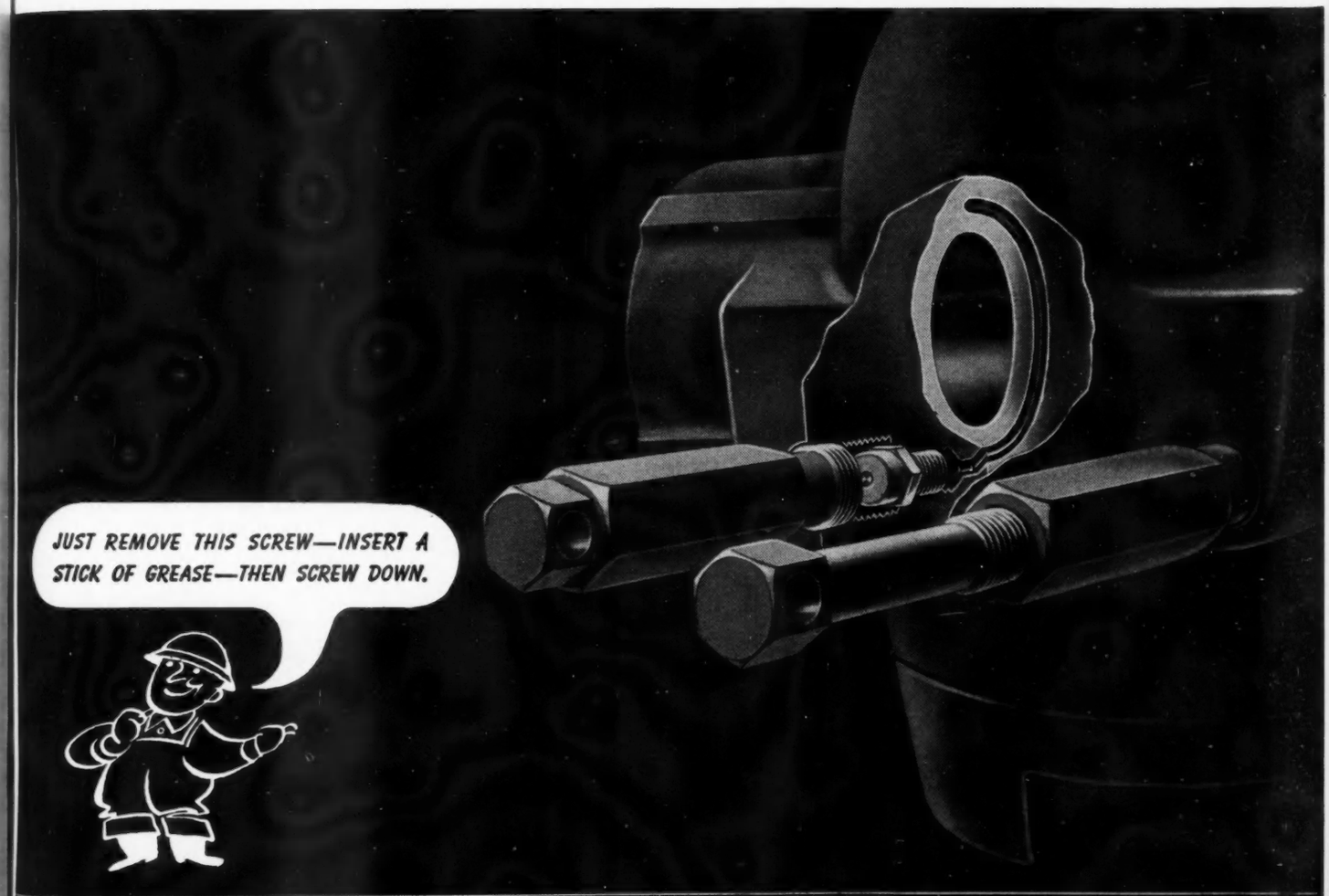

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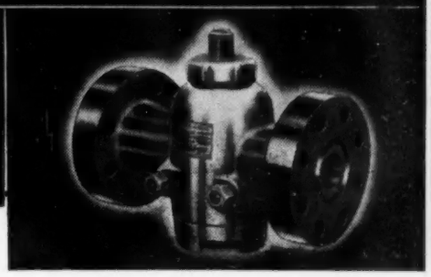


MEN IN THE INDUSTRY'S NEWS

WESLEY FISHER has been named sales representative by Briggs Clarifier Company to work with The Continental Supply Company in promoting sales in the Mid-Continent area. Fisher, who has had 12 years experience with oil clarifying and filtering equipment, with special attention to lubricating problems, will make his headquarters in Houston.

G. R. GIBSON, former professor of geology at Ohio State University, Columbus, has joined Magnolia Petroleum Company's West Texas geological staff, with headquarters at Midland.

GEORGE PIRTLE, member of Hudnall & Pirtle, consulting geologists of Tyler, Texas, is vacationing in Mt. Pleasant, Michigan. He was associated with McClanahan Oil Company in Michigan in 1929, and again in 1932.

ROBERT GIVENS, geologist with Dapar Oil Company, Grand Rapids, Michigan, has been called to active army duty with the air corps at Selfridge Field, Mt. Clemens, Michigan.

DWIGHT A. MOORE, assistant secretary-treasurer and controller of Wilshire Oil Company, has been named president of the Los Angeles Petroleum Accountants Society, succeeding W. A. Russell, Seaboard Oil Company. Other officers named were Irving J. Hancock, Union Oil Company, first vice president: N. J. Allen, Lincoln Petroleum Company, second vice president, and Charles V. Slack, General Petroleum Corporation, secretary-treasurer. John F. Baumgaertner, The Ohio Oil Company, was elected to fill a vacancy on the board, and A. F. Hagen, Shell Oil Company, and John P. Vezzetti, Sunset Oil Company, were re-elected to the board.

PARKER L. MELVIN, Towne-Melvin Oil Company, Bradford, was re-elected president of Pennsylvania Grade Crude Oil Association when that group held its annual meeting in Bradford, June 19-20. Other officers named were A. E. Booth, Bradford, first vice president; D. T. Ring, Preston Oil Company, Columbus, Ohio, second vice president; Sam Messer, Quaker State Oil Refining Corporation, Oil City, treasurer; W. R. Reitz, Quaker State Oil Refining Corporation, Oil City, assistant treasurer; John A. Beck, Pennsylvania Refining Company, Butler, corresponding secretary; J. E. Moorhead, Oil City, executive secretary; S. F. Pratt, Oil City, assistant secretary, and F. B. Dow, Washington, general counsel.

SIR WILLIAM FRASER has been named Chairman of Anglo-Iranian Oil Company, succeeding the late Sir John Cadman. Fraser had been a director of the company since its association with Scottish Oils, Ltd. He is a director of the organization's affiliated and subsidiary companies, including Burmah Oil Company, Scottish Oils, and Iraq Petroleum Company. He was born in Scotland in 1888. His father, the late William Fraser, was one of the founders of the shale industry in Scotland. Fraser entered his father's laboratories when 19, was educated at Glasgow Academy and the Royal Technical College, Glasgow.

District managers and representatives of Kobe, Incorporated's Mid-Continent Division met in Oklahoma City last week. Shown in the front row, left to right, are B. G. Wilkerson, Oklahoma district manager; P. D. Cornelius, South and East Texas district manager; H. K. Browning, division sales manager; C. M. Rader, division manager; R. G. Ralph, technical service department manager; W. C. Gilmore, Texas Panhandle district manager; M. L. Walraven, Jr., Kansas district manager, and H. K. Ihrig, Illinois manager. Standing are W. F. Slater, Tulsa representative; E. T. Harrison, Tyler representative; R. B. Walter, materials department manager; R. A. Feemster, Oklahoma City representative; H. W. Wilson, West Texas manager; R. J. Lyons, Dallas representative; C. E. Buchner, Jr., Houston representative; J. F. Griffin, purchasing agent; R. J. Jackson, chief accountant.

FRANK C. SMITH, president of Houston Natural Gas Corporation, last week was named chairman of the board of trustees of the Institute of Gas Technology, organized earlier in the month as a non-profit educational organization affiliated with the Illinois Institute of Technology, Chicago.

The institute was organized to provide a means wherein fundamental and applied research in the gas industry can be conducted; carefully selected technical school graduates can be educated through research work and special courses of interest and value to the gas industry, and graduated for possible employment by members supporting the institute; research can be stimulated in the industry; a scientific and technical library of books, periodicals, papers and articles of value and interest to the gas industry, research workers and others can be collected, and from which valuable information can be prepared and distributed to members; and gas industry researches can be better coordinated as to past and current investigations, placement of such projects and useful advice given on related matters.

Members of the board include Frank H. Adams, president, Surface Combustion Corporation; F. M. Banks, vice president, Southern California Gas Company; Walter C. Beckjord, vice president, Columbia Gas & Electric Corporation; H. J. Cook, Jr., vice president, Consolidated Gas, Electric Light & Power Company of Baltimore; P. M. Downing, vice president, Pacific Gas & Electric Company; Thomas Drever, president, American Steel Foundries; E. M. Farnsworth, president, Boston Consolidated Gas Company; R. B. Harper, vice president, People's Gas Light and Coke Company; George S. Hawley, president, Bridgeport Gas Light Company; Dr. Henry T. Heald, president, Illinois Institute of Technology; W. Alton Jones, president, Cities Service Company; Alfred Kauffman, president, Link-Belt Company; Frank H. Lerch, Jr., president, Gas Companies, Inc.; N. C. McGowen, president United Gas Pipe Line Company; Clifford Paige, president, Brooklyn Union Gas Company; Herman Russell, president, Rochester Gas and Electric Corporation; Louis Ruthenberg, president, Servel, Inc.; Frank C. Smith, president, Houston Natural Gas Corporation; Marcy L. Sperry, president, Washington Gas Light Company; and Wilfred Sykes, president, Inland Steel Company.

WALTER VOIGHTLANDER, chief engineer for Union Wire Rope Company, Kansas City, last week discussed "The Care and Use of Wire Lines" before the Seminole chapter of the American Petroleum Institute's Division of Production.

WALTER WHITMAN, head of the department of chemical engineering at Massachusetts Institute of Technology, has been named part-time consultant in

the petroleum division of the Office of Production Management. He will devote three days a week to OPM work.

EDGAR CLAYTON, supervising engineer in Brazil for Drilling & Exploration Company, Los Angeles, has returned to his home in Southern California for a vacation. He will return to his headquarters at Bahia about July 1.

MICHAEL L. BENEDUM, Benedum & Trees Oil Company, Pittsburgh, has been awarded an honorary degree by Allegheny College, Meadville, Pennsylvania.

J. A. BAILEY, Shell Oil Company petroleum engineer at McPherson, Kansas, has been transferred to Pampa, Texas.

BAKER HOSKINS, 41, geologist with Shell Oil Company, and treasurer of the South Louisiana Geological Society, died June 22 from complications arising from an operation.

FRANK J. GARDNER, geologist for Ira Rinehart's Oil Report, Houston, last week was awarded the Joseph S. Cullinan scholarship in petroleum geology at the University of Texas.

CARL D. McWADE, advertising manager for The Continental Supply Company, Dallas, has started a year's military service. His duties with the company are being assumed by A. J. Mueller.

U. R. LAVES, geologist of Ada, Oklahoma, has opened an office in Shawnee with Robert Brown, of that city.

WIRT FRANKLIN spoke on the future of the oil industry before Tulsa Chamber of Commerce last week.

REVIS W. JAMES, 45, official of T.W.M. Oil Producing Company and Kesson Oil Company, was instantly killed June 20 in an auto accident near Corpus Christi, Texas.

WALTER E. HURD, 55, former official of Homestead Oil & Gas Company and Textor Oil Corporation, died June 19 at his Fort Worth residence. He was a native of Pennsylvania, where he en-

New York Nomads Chapter Holds Season's First Outing at Long Island Country Club

THIRTY-FOUR members and guests of the New York Chapter of Nomads took part in a golf tournament at Oakland Country Club, Long Island, June 11 that marked the group's first outing of the season. Non-golfers played cards.

I. Frank Brown, export representative, turned in the low gross score of the day, a 79, and received a trophy. Kicker prizes went to Val Wittich, Walter Fellowes, Herb Maland and Olie Olson.

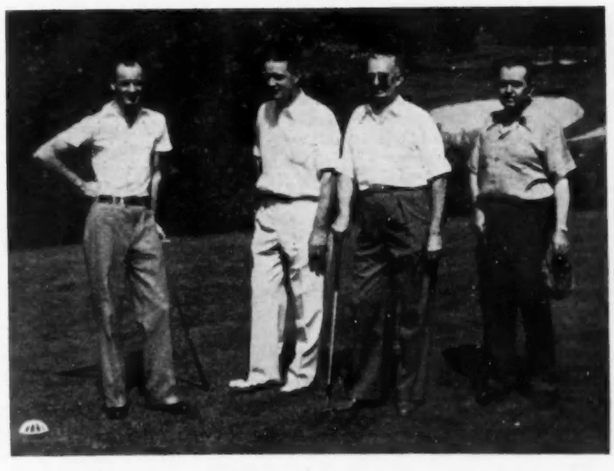
Bud Bishop chipped his way to the championship of the indoor golfers for a prize provided by the other players.

Talbot Simpson, N. K. P. M. Oil Company, Sumatra, discussed conditions in the Far East during the dinner meeting, while James A. Thomas, The Parkersburg Rig & Reel Company, club president, discussed the position of oil equipment manufacturers in relation to present day conditions. William G. Foster, Harry C. Potts and John Hicklin also addressed the meeting.

I. Frank Brown admires his trophy.

Watching the cameraman from a sitting position: H. C. Potts, Kerotest Manufacturing Company; Roger Motherall, The Petroleum Engineer; Ted Carter and Charles Gettis, Shaffer Tool Company, and E. H. Bishop, Oil Well Supply Company.

This group includes J. H. Baird, Byron Jackson Company; Val Whittich, export representative; John Hicklin, of Trinidad, and Bill Campbell, Petroleum Machinery Corporation.



R. H. McPeake, Oil Well Supply Company; E. M. Gretzler, National Supply Company; W. G. Foster, Anglo-American Purchasing Company; W. H. Siems, Hughes Tool Company.

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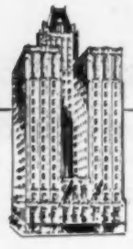


gaged in oil operations, then spent some years in Canada as a mining engineer before launching Texas oil development.

GEORGE C. NANCE, who joined Gulf Oil Corporation as an accounting department employe at Houston 24 years ago, retired June 1 from Mene Grande Oil Company, having been stationed at Maracaibo, Venezuela. He was transferred from Houston to Tampico, Mexico, in 1922, and to the New York office of South American Gulf Oil Company in 1928. He went to Maracaibo in 1929 with Venezuela Gulf Oil Company, remaining there when the company was succeeded by Mene Grande Oil Company. Nance has returned to Dallas where he and Mrs. Grace Dabbs are to be married.

FREDERIC R. PRATT, Socony-Vacuum Oil Company, has been named chairman of the petroleum committee of United Service Organizations for National Defense.

JOHN MENKE, drilling contractor and producer with headquarters at Tyler, Texas, was seriously injured June 23 when connections broke loose at a deep gas-distillate well near Groesbeck.

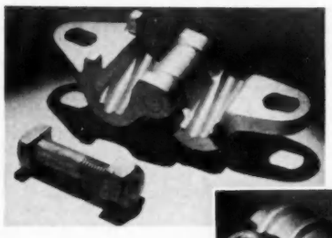
AMOS L. HARRIS, who returned a few months ago from Brazil where he was employed by a Brazilian oil company, is returning to Brazil in the employ of a Sinclair subsidiary.

WILEY R. GEORGE has been made Southwest Texas district representative for Sabine Royalty Corporation. A 1933 graduate of Rice Institute, Houston, he was for six years with The Pure Oil Company at Beaumont.

ADOLPH DOVRE, geologist, will discuss the Charamousca field, Duval County, before the South Texas Geological Society meeting in San Antonio at noon, Monday, June 30.

OSCAR C. HOHL, 52, well known in the oil supply and equipment business, died in Houston June 22. He formerly was with Oil Well Supply Company and later was Gulf Coast district manager of American Well & Prospect Company, retiring from that position to enter private business two years ago. While with Oil Well, he "made" practically every Gulf Coast boom from Goose Creek on. He had a wide acquaintance with oil men from abroad.

HOMER T. LAMB, 63, former president of Red Bank Oil Company, died in Tulsa. Lamb began as a driller in and around Clarion County, Pennsylvania, when 19 years old. He later opened fields in Kansas and Oklahoma, traveled into the Rocky Mountain area where he organized Big Horn Oil & Gas Company, Greybull Refining Company and other firms, and returned to the Mid-Continent to continue his interests. Red Bank Oil Company, formed in 1917, opened fields in Oklahoma.



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The clamping surfaces in the BUCK CLAMP are scientifically formed to fit the lay of the wire, and positively prevent line kinking. It provides greater gripping area and higher clamping strength . . . with grooves, not wrinkles. It's safer and, with only one bolt, is much faster. It's your best clamp buy.

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Fishing Season, with Cavins, never closes. We're "invited" day after day . . . the year 'round . . . and we get some rare fish. The Cavins Automatic Hydraulic Suction Bailer, with a Cavins Junk Basket and By-pass Valve, caught the pile pictured above.

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NOTES FOR THE Equipment Buyer and User

Pipe Wall Scraper

BAKER OIL TOOLS, INC.

A scraper for cleaning inside walls of pipe in a well, designated Baker rotary casing scraper, has been announced by Baker Oil Tools, Inc., Box 127, Vernon Station, Los Angeles. It is designed to remove a sheath or thin wall of hardest cement that may adhere to the inside walls of casing after a cementing operation, and for removal of paraffin or other materials that may adhere to, or become deposited on the inside walls of the pipe.

The tool, which is merely placed between the bit and the drill collar and run into the well without tripping or other special procedure, consists principally of a body in which three reamer-type hard-faced blades are mounted in a vertical position. The blades are pressed outwardly against the pipe walls by coil springs, but prevented from extending beyond a maximum expanded position by retaining segments at the top and bottom of each blade.

Provided with a tool-joint pin on its upper end and similar box on its lower end, the connection between the drilling bit and the drill collar is merely broken and the scraper inserted. The springs press the blades outwardly, permitting the scraper to be run down the hole with the blades riding against the inside walls of the casing. When the section of pipe to be scraped or cleaned is reached, the drill string is rotated as in normal drilling. Blades are designed to adjust themselves to all pipe thicknesses, and to compress sufficiently to run through joints of internal upset pipe.

Jacks

Templeton, Kenly & Company, 1020 South Central Avenue, Chicago, has issued Catalog 41, giving 56 pocket-size pages descriptive of its line of jacks for lifting, lowering, pushing, pulling and supporting. It includes revised price schedules, effective June 2, 1941.

Water Stills

F. J. Stokes Machine Company, Philadelphia, has issued Catalog 41-S, showing steam-heated, single-effect automatic water stills in capacities from 10 to 100 gallons-per-hour, in which have been incorporated new features to aid in production of pure distillate for laboratory and industrial purposes. The stills are hard-water models, equipped with automatic bleeder devices to continuously remove scale-forming solid materials concentrated in the boiling chambers. A diagram shows method of operation.

Reduction Gears

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pennsylvania, has issued Bulletin B-2278, giving eight pages describing coupled reduction gears for driving compressors, line shafts and generators.

Oil-Well Cement

LONE STAR CEMENT CORPORATION

A deep oil-well cement, designated Texcor and developed for use in wells at the highest temperatures now encountered or likely to be encountered at depths of 15,000 feet or more, has been announced by Lone Star Cement Corporation, Dallas and Houston.

Mixed with 40 percent water, the cement is rated pumpable in excess of eight hours at 200° F. to provide an increased factor of safety in oil-well cementing and at the same time provide strengths in excess of 5000 pounds in 24 hours and 6000 pounds in 48 hours.

In mixing a slurry with Texcor, excess mixing water is automatically indicated by appearance of excessive surface bubbles in the slurry tub, providing a safeguard against use of too much mixing water. In development of the product, engineers had in mind special problems of squeeze jobs where long pumpability, low initial viscosity and maximum density are necessary for satisfactory results under difficult operating conditions.

Trailer

HOBBS MANUFACTURING COMPANY

A 15-ton trailer featuring a weight-distributing gooseneck that works on a fifth wheel on top of an oil-field truck body, has been announced by Hobss Manufacturing Company, Fort Worth, Texas.

The inverted fifth wheel can be mounted and unmounted on the truck body in place of the trailer bolster, enabling an operator to use an oil-field truck as a tractor for hauling heavy equipment instead of using a truck with permanent fifth wheel.

Filter

MORAINE PRODUCTS DIVISION

A porous metal product designed to remove foreign materials from fluids, and to alter characteristics of gases by diffusion, reducing pressures and controlling flow rates, designated Porex, has been announced by Moraine Products Division, General Motors Corporatoin, Dayton, Ohio. It is made from powdered metal subjected to a series of processing operations.

Physical characteristics, including chemical composition, structure, porosity, strength and ductility, may be varied within limits to suit specific applications, and similar variations may be accomplished in size and shape. Standard shapes now available are discs, sheets, cylinders and truncated cones. Special shapes are obtainable.

Porex may be bonded to steel and copper, thereby being made an integral part of solid metal which may be machined, ground, bored, threaded or processed for individual requirements.

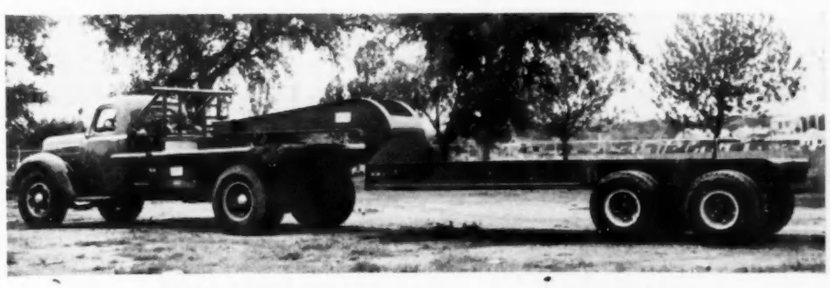
Used as a filter, it is designed to permit high flow rates, low flow restriction and a high degree of surface clogging before efficiency is reduced. As a diffusing plate, it is designed for low flow restriction and uniform, controlled porosity.

Cooling Water

D. W. Haering & Company, 2308 South Winchester Avenue, Chicago, is making available reprints of "The Study of Water Problems in Atmospheric Cooling Systems," which first appeared in the March issue of Refiner & Natural Gasoline Manufacturer. Scope and complexity of the cooling water problem are discussed with emphasis on control of corrosion and scale formation. Illustrations and a description of six laboratory cooling systems used in the research are presented. Charts and tables present data obtained from the studies, while other illustrations show types of scale formed during the experimental runs.

V-Belts

The B. F. Goodrich Company, Akron, Ohio, has issued a 1-page catalog section, No. 2181, giving standard fractional horsepower V-belt tables. It describes construction of the company's V-belt.



Hobbs Manufacturing Company Fifteen-Ton Trailer

EXECUTIVES CAN WORK

in the new

BEDROOM SLEEPING CAR

on the OWL, overnight TRAIN between

GALVESTON • HOUSTON • DALLAS

You can work, in quietness and privacy, in the **double bedroom.** The hinged desk is for your convenience, as shown above left. The wash basin, as seen on the right, folds into the wall.

The roomy bed is 6 feet 5 inches long (there is an upper berth which similarly makes down into a bed). Also, there are clothes hooks, vacuum bottle for ice water, full length mirror, luggage space, and private lavatory facilities. You'll enjoy the privacy and comfort of the **double bedroom!**

SOUTHERN PACIFIC LINES

Only one rail ticket required for each passenger

BEDROOM FARE each way between Galveston-Houston and Dallas—

$4.75
For One Person

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Costs only a few cents more than a section!

Northbound		*Southbound*	
Lv. Galveston	7:10 P.M.	Lv. Dallas	11:30 P.M.
Lv. Houston	11:30 P.M.	Ar. Houston	6:30 A.M.
Ar. Dallas	6:55 A.M.	Ar. Galveston	9:45 A.M.

At Houston and Dallas, the bedroom car is opened for occupancy at 9:30 P.M. At Houston and Dallas, the bedroom may be occupied until 8:00 A.M.

ALSO, NEW DOUBLE BEDROOM CAR ON SUNSET LIMITED between New Orleans - Houston - San Antonio - El Paso - Los Angeles - San Francisco

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